ENGINEERING NEWS-RECORD

▶

▶

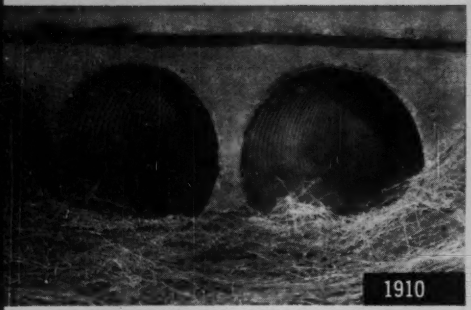
In a narrow canyon, an earthfill dam

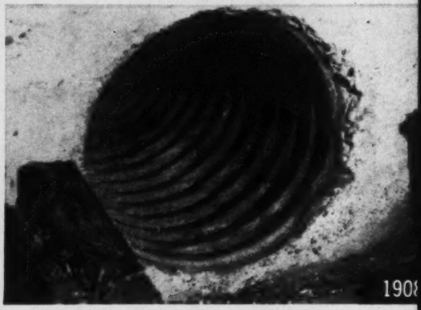
STEVENS RICE GS
UNIV MICROFILMS INC EDI
313 N FIRST ST
ANN ARBOR MICH

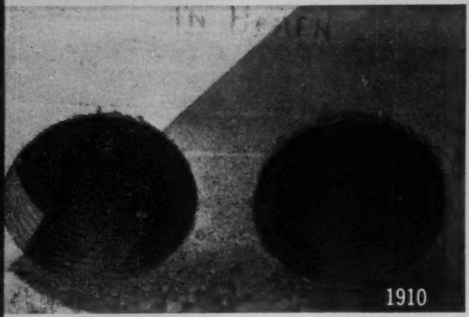
A McGRAW-HILL PUBLICATION

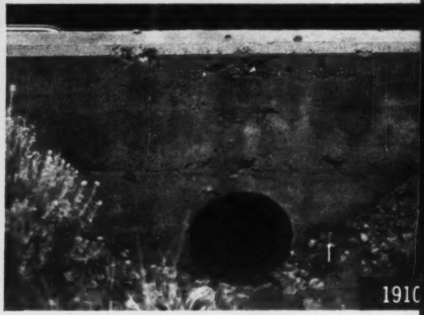
These Armco Pipes are 50 Years Old...or Older

New steels are
born at
Armco









Durability? All these zinc-coated Armco Corrugated Metal Pipes are at least a half-century old with many more years of service left!

Armco Drainage Structures, with a choice of pavements and linings in addition to the zinc coating, are available in a wide selection of sizes, shapes and gages. For new catalog that helps you select the *right* structure for your problems, send coupon. Armco Drainage & Metal Products, Inc., 6220 Curtis Street, Middletown, Ohio.

ARMCO DRAINAGE & METAL PRODUCTS, INC.
6220 Curtis Street, Middletown, Ohio

☐ Send me NEW Catalog on Corrugated Metal Pipe and Pipe-Arch

Name____________________

Company____________________

Street____________________

City__________ Zone____ State________

ARMCO DRAINAGE & METAL PRODUCTS

ARMCO

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company • The Armco International Corporation • Union Wire Rope Corporation

MIGHTY...HEALTHY...POWER

Whether your choice is the 225-hp HD-21 or the 150-hp HD-16, you get from 8½% to 27% more efficient engine operation than from other crawlers.

This fuel-pinching efficiency is a fact! Your Allis-Chalmers dealer will show you actual proof of up to 27% fuel savings in the Allis-Chalmers 16000 or 21000 engines over units of comparable size. He'll tell you why they run cleaner, "sip" fuel to earn the title "industry's healthiest engines."

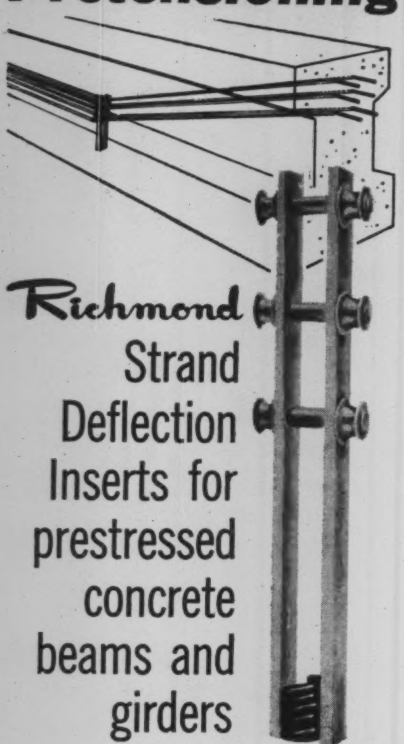
Six crater-shaped pistons develop 225 hp in the HD-21, 150 hp in the HD-16 . . . both at an easy 1825 rpm. Coupled with torque converter drive they provide plenty of rough dozing lugability . . . all the power you'll ever need.

These big Allis-Chalmers tractors are built for mighty tough service. Shock-absorbing all-steel main frame, durable double-reduction final drives, certified permanent lubrication of tapered roller bearing truck wheels, idlers and rollers, and extra tough track keep them going season after season with a minimum of maintenance. Your Allis-Chalmers construction machinery dealer will be glad to show you an HD-21 or HD-16 soon. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

move ahead with

ALLIS-CHALMERS A-C ALLIS-CHALMERS

power for a growing world



Pretensioning

Richmond Strand Deflection Inserts for prestressed concrete beams and girders

Included in Richmond's complete line of inserts and accessories for prestressed concrete are a variety of strand deflecting devices, designed to accommodate ¾", 1" and 1¼" bolts or eye bolts to suit your project and match your pretensioning bench.

Richmond Strand Deflectors are manufactured for single, double and triple lines of strands and are available with or without keepers or rollers.

There is a standard line of Richmond Strand Deflection Inserts but, since requirements for deflecting devices vary widely, special units can be manufactured on request to suit individual needs.

For information about Richmond-engineered Strand Deflection Inserts for prestressed beams and girders contact us or our distributors: Intercontinental Equipment Co., Inc., 120 *Broadway, New York* 5, *N. Y.*...*and if you have a specific concreting problem, ask our Technical Department about it—they can help you. Write to:—*

Richmond
SCREW ANCHOR CO., INC.
INSIST ON RICHMOND
AND BE SURE IT'S RICHMOND

Main Office: 816-838 LIBERTY AVE., BROOKLYN 8, N. Y.
Plants & Sales Offices: Atlanta, Georgia • Ft. Worth, Texas • St. Joseph, Missouri • **In Canada:** ACROW-RICHMOND LTD., Orangeville, Ontario.

EIGHTY-SIXTH YEAR OF PUBLICATION

ENGINEERING NEWS-RECORD

ABP ABC MEMBER

Editorial Offices, 330 W. 42nd St., New York 36, N. Y.
New York- LOngacre 4-3000; Chicago - MOhawk 4-5800; San Francisco - DOuglas 2-4600
Washington - REpublic 7-6630

Editor, Waldo G. Bowman

Managing Editor, **Arthur J. Fox, Jr.**
Senior Editor, **Frederick S. Merritt**

Highways, Airports—Transportation
Leo J. Ritter, Jr., Edward M. Young, Jr., Joseph F. Wilkinson

Buildings, Bridges—Structures
David B. Hill, Marianne Stern Friedland, C. W. Griffin, Jr.

Rivers, Sanitation—Water Resources
James B. Sullivan, William W. Jacobus, Jr.

Finance, Labor—Management
Robert J. Stinson, Charles J. Harding

Regional Editors
J. Roland Carr, *Chicago, 520 N. Michigan Ave.*
Martha Alexander, *Staff Assistant*
Lauress L. Wise, *San Francisco, 68 Post St.*

Copy—Production
Irwin Landau, Nancy Parkes, John C. Greenough, Robert M. Echols

Presentation
Harry W. Jensen, Robert G. Young

Correspondents, Bureaus
Leah Shanks

Statistics, Prices, Costs—Business News
Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel, Marian Sciorra, Marie Moravsik,
Elaine Chomyak, Elizabeth Werra, Eleanor Queret
James Webber, Ruth Carlson, *Economics*
William P. Larkin, *Prices, Wages, Indexes*
Evelyn Huber, Charlotte Foster, *Statistics*
Bertha Herrmann, *Unit Prices*

Editorial Research and Indexing
Eva Gierat, Rene Hay
Charlotte Knight, Jane Jacobson

Consulting Editors: **Van Tuyl Boughton, Nathan A. Bowers**

Advertising Sales Manager: **Donald S. Robertson**

Circulation Manager: **Edward F. Bressler**

Washington Bureau, National Press Bldg., Washington 4, D. C., George B. Bryant, Jr., Chief, Alan Adams, Glen Bayless, Roy Calvin, Anthony DeLeonardis, John Donaldson, Jay Flocken, Boyd France, Donald Loomis, Gladys Montgomery, Arthur Moore, Seth Payne, Dean Reed, Morton Reichek, Caroline Robertson, Vincent Smith.

Domestic News Bureaus: Atlanta—801 Rhodes-Haverty Bldg., B. E. Barnes, Chief, Frances Ridgway; **Chicago**—520 N. Michigan Ave., Stewart Ramsey, Chief, Bruce Cross; **Cleveland**—55 Public Square, Arthur Zimmerman, Chief, Violet Forsha; **Dallas**—901 Vaughn Bldg., Marvin Reid, Chief, Lorraine Smith; **Detroit**—856 Penobscot Bldg., Donald MacDonald, Chief, Sally Ayling; **Los Angeles**—1125 W. 6th St., Kemp Anderson, Jr., Chief, Michael Murphy, Jack Meyer, Marvin Petal; **San Francisco**—68 Post St., Jenness Keene, Chief, Donald Winston, Alison Lunt; **Seattle**—6040 Fifth Ave., N.E., Ray Bloomberg.

Foreign News Bureaus: London—John Shinn; **Paris**—Robert Farrell; **Mexico City**—Peter Weaver; **Bonn**—Morrie Helitzer; **Beirut**—O. M. Marashian; **Tokyo**—Sol Sanders; **Rio de Janeiro**—Leslie Warren; **Caracas**—John Pearson; **Moscow**—Ernest Conine.

Correspondents: In 70 principal U. S. cities and 70 cities throughout the world.
Director of News Bureaus: John Wilhelm; **Managing Editor, Margaret Ralston.**
McGraw-Hill Economics Department: Dexter M. Keezer, Director.

Publisher, Robert F. Boger

ENGINEERING NEWS-RECORD, Vol. 164, No. 14, APRIL 7, 1960

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. Publication Office, 99-129 North Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change in address. **Executive, Editorial, Advertising and Circulation Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** OFFICERS OF THE PUBLICATIONS DIVISION: Nelson L. Bond, President; Shelton Fisher, Wallace F. Traendly, Senior Vice Presidents; John R. Callaham, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. OFFICERS OF THE CORPORATION: Donald C. McGraw, President; Joseph A. Gerardi, Hugh J. Kelly, Harry L. Waddell, Executive Vice Presidents; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary. **Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders.** United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20 per year, payable in advance. Second-Class mail privileges authorized at Albany, New York. Printed in U.S.A. Title registered in U.S. Patent Office.

©Copyright 1960 McGraw-Hill Publishing Co., Inc. All Rights Reserved.

UNCONDITIONAL GUARANTEE: We agree, upon request to our New York office, direct from paid-up subscribers, to cancel any subscription if ENGINEERING NEWS-RECORD's editorial service is unsatisfactory, and will refund the proportionate subscription price of any unmailed copies.

SUBSCRIPTIONS: Send subscription correspondence and change of address to Fulfillment Manager, ENGINEERING NEWS-RECORD, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify, publisher *promptly of any change of address, giving old as well as new address, and including postal zone number,* if any. If possible enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send Form 3579 to Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Now New York specifies basic lead silico chromate in all coats of rust-inhibitive paint system

You can be *sure* that before any state changes a basic materials specification, evidence must be substantiated indicating superior performance.

Adoption by the New York State Department of Public Works of a rust-inhibitive paint system containing basic lead silico chromate pigment in all coats, is a case in point. The initial evidence for this decision was established by more than ten years of exposure testing by National Lead at its Sayville, Long Island, Test Station.

It was found that even without a finish coat to protect them, primers containing *M50*® basic lead silico chromate pigment endured ten years. And the *M50* pigment, unlike other rust-inhibitors, could be used in intermediate and finish coats as well as in primers.

Then the state obtained its own evidence by painting several bridges with basic lead silico chromate paints. One such job was the renovation of the Albany, New York, bridge shown above. It called for both shop-coat priming of new steel and spot priming of the old. And the intermediate and finish coats were properly applied in the Fall.

Pass field test with flying colors

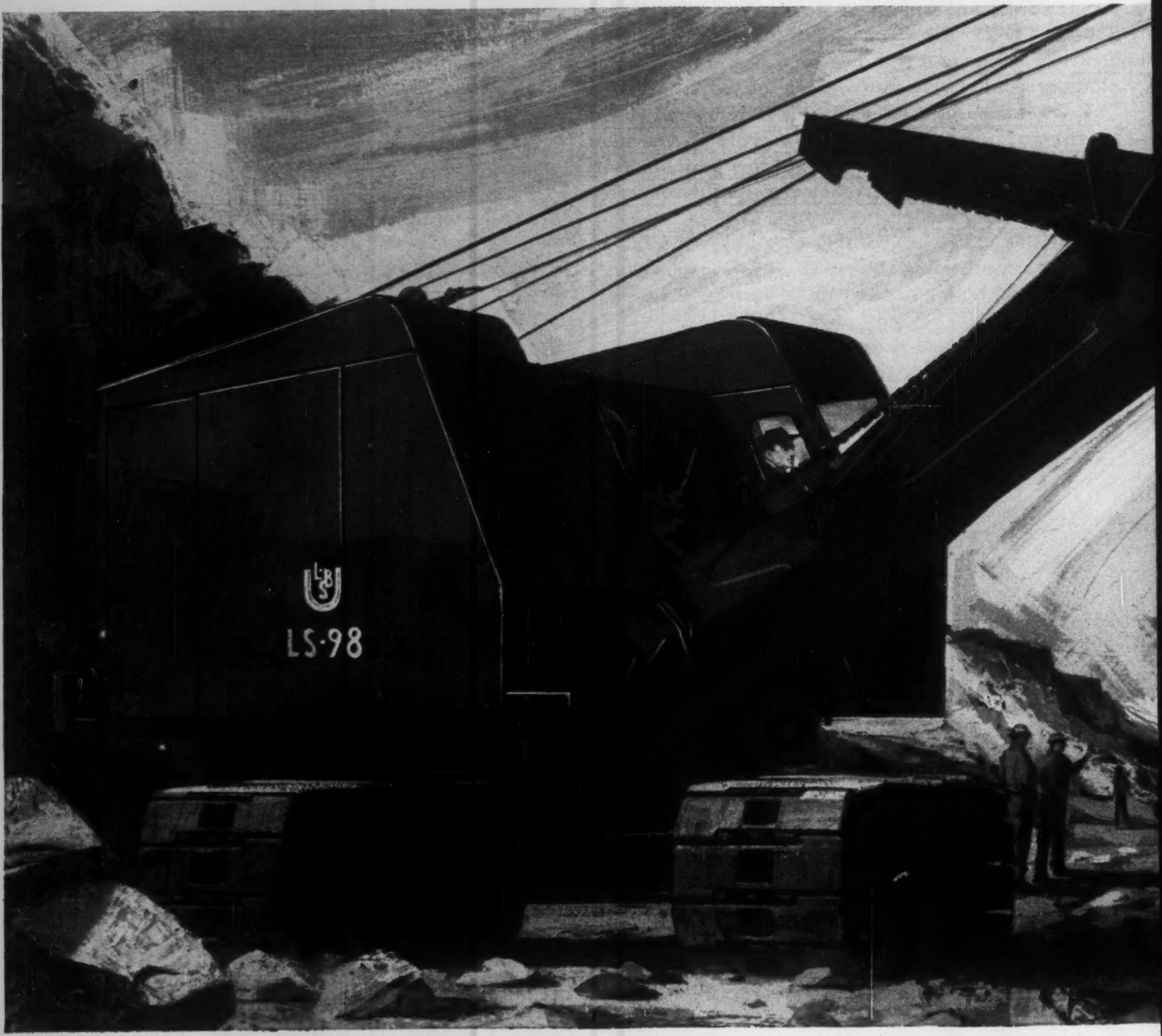
New York State Engineers were more than satisfied . . . not only with the performance but also with the working properties, tint retention, and color uniformity of the basic lead silico chromate paints. On November 28, 1958, the Division of Construction of the New York State Department of Public Works issued new "Paint and Painting" specifications calling for basic lead silico chromate pigment *in all coats* of the typical rust-inhibitive paint system for highway structures. Today, state after state is following suit.

For information on basic lead silico chromate paints, consult your regular paint suppliers. For technical details on National Lead's basic lead silico chromate, *M50* pigment, contact National Lead Company.

M50® *an* **oncor** *Pigment...A Development of* **National Lead Company**

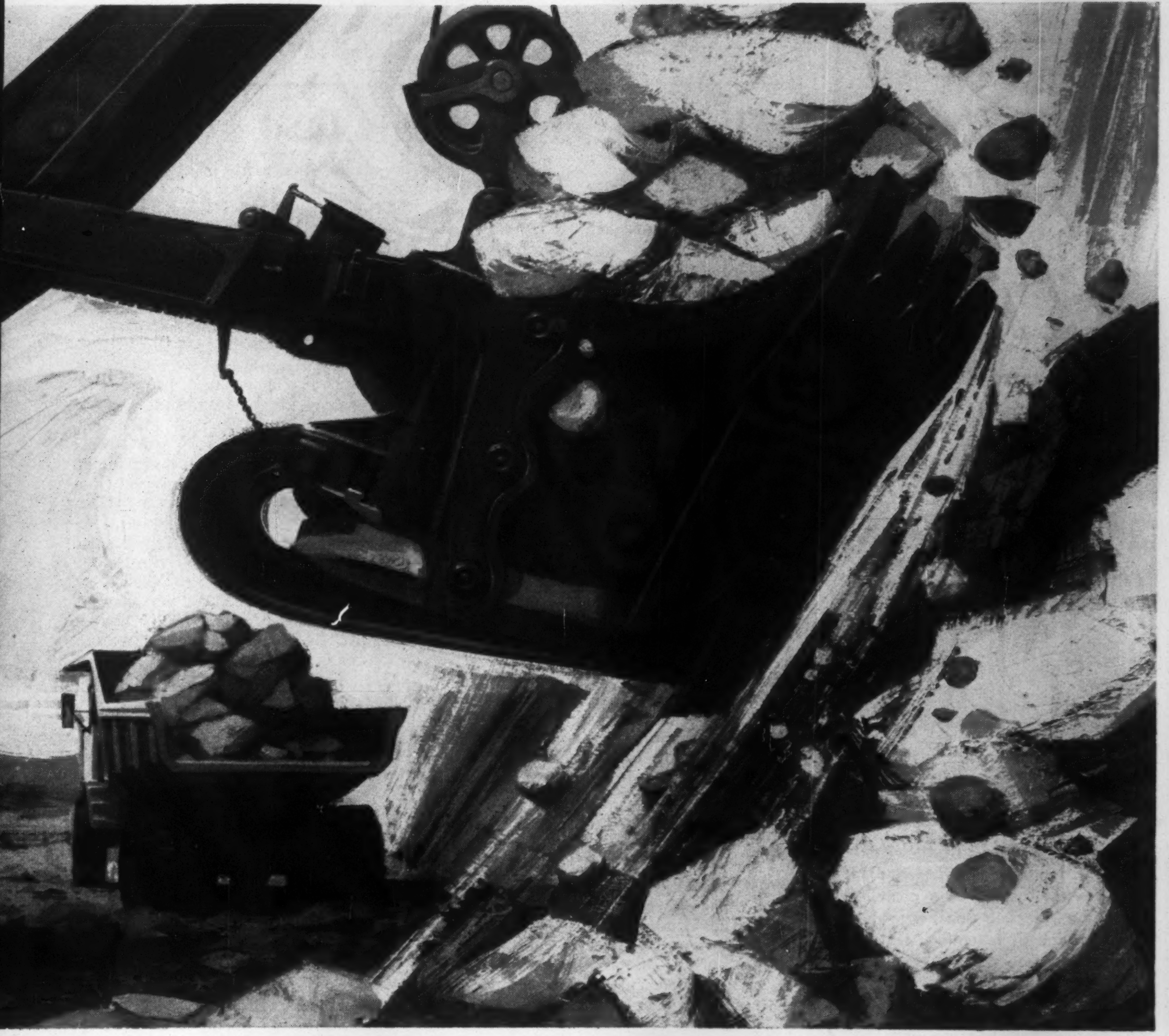
TRADEMARK

General Offices: 111 Broadway, New York 6, N.Y.



TANK-TOUGH LINK-BELT SPEEDERS...

treat rock like dirt !



All-welded and stress-relieved — stamina, strength and guts to shrug off years of hard work! Tough, impact-loving Link-Belt Speeders thrive on the roughness of rock. They're built for rugged duty with all-welded, stress-relieved, jig-bored frame assemblies. Precision boring permits parts interchangeability, steps up machinery strength under stress. Extra-size, heat-treated machine components transmit more of rated hp to swing, hoist, travel, slam the dipper in. All-welded shovel-booms and dipper sticks . . . all-manganese buckets soak up strains without a shudder. Shafts, gears, bearings are precision aligned, stay aligned. No shims needed. Clutches are self-compensating for heat and normal lining wear.

Split-second Speed-o-Matic controls cut operator fatigue — power steer and more usable hp spurt rock output! Nudge a Speed-o-Matic power hydraulic control lever. Feel this brute obey! Trigger-fast shovel reflexes produce up to 25% more cycles per 8-hour shift. And finger-tip Speed-o-Matic power steering gives you double-quick maneuverability in, out, around blast rock, crusher or truck. No sloppy mechanical wear and repair. Payoff: top-profit rock production for *years* . . . at rock-bottom cost. For information on the complete line of shovels and cranes (½- to 3-yd., 8- to 75-ton capacities), see your distributor or write LINK-BELT SPEEDER CORPORATION, Cedar Rapids, Iowa. 101-60-N

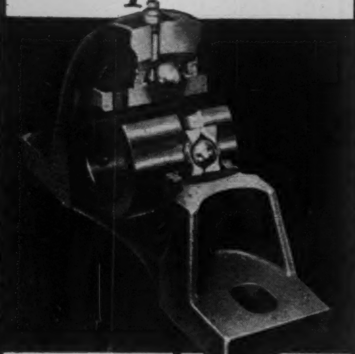
LINK-BELT SPEEDER

21 crawlers
6 truck-cranes
4 self-propelled

It's time to compare . . . with Link-Belt Speeder

SEALMASTER®

...quality that builds acceptance!



"LP" PILLOW BLOCK

RUBBER-MOUNTED PILLOW BLOCK

There is no greater assurance of performance than quality. SEALMASTER gives you that quality in a complete line of ball bearing units, providing a wide range of mountings in shaft sizes from 1/2" to 4 15/16".

The new SEALMASTER "L" Series provides a precision, low-cost line of self-aligning ball bearing units.

SEALMASTER rubber mounted units provide extremely quiet operation where noise is an important factor.

Whatever you look for in a bearing unit—quality—performance—economy—there's nothing comparable with SEALMASTER!

WRITE FOR CATALOG 454

SEALMASTER
BALL BEARING UNITS

SEALMASTER BEARINGS
A DIVISION OF
STEPHENS-ADAMSON MFG. CO.
84 RIDGEWAY • AURORA, ILL.
PLANTS LOCATED IN: LOS ANGELES, CALIF.
CLARKSDALE, MISS. • BELLEVILLE, ONTARIO

Reader Comment

High-Strength Bar Test

SIR—Your editorial on high strength reinforcing (ENR March 3, p. 92) and the report by George Winter and Eivind Hognestad at the annual meeting of the Highway Research Board in February add firm support to studies reported by F. A. Richards, M. J. Greaves and J. J. Stewart from 1954 to 1959.

In these studies, laboratory beams that were alike except for grade of reinforcement were tested under identical loading conditions—both statically and dynamically. The studies showed:

Beams reinforced with hard-grade reinforcing steel consistently out-performed beams with intermediate-grade or structural-grade steel in tests of both static and dynamic elastic-load capacity and static and dynamic ultimate-load capacity.

Review of an extensive literature showed no test data to indicate that structural or intermediate-grade steel is better than hard-grade steel for reinforcement against damage due to heavy simulated-blast loads. Moreover, the studies showed that whatever ductility a reinforcing bar has in excess of about 3% elongation (in a 8-in. gage length) serves no useful purpose as beam or slab reinforcement, since concrete starts to disintegrate when the strain in the steel reaches about 3%.

The studies by Mavis and co-workers were conducted at Carnegie Institute of Technology and published in two sound motion pictures and in the following papers: Mavis and Richards, "Impulse Testing of Concrete Beams," JOURNAL OF THE AMERICAN CONCRETE INSTITUTE, Sept., 1955, p. 93; Mavis and Greaves, "Destructive Impulse Loading of Reinforced Concrete Beams," JOURNAL OF THE AMERICAN CONCRETE INSTITUTE, Sept., 1957, p. 233, and discussion, March, 1958, p. 811; Mavis and Greaves, "Instrumentation and Method for Impulse Testing of Reinforced Concrete Beams," ASTM BULLETIN, Dec., 1957, p. 43; Greaves and Mavis, "Inelastic Behavior of Impulsively Loaded Beams," TRANSACTIONS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS, vol. 124 (1959), p. 395; Mavis and Stewart, "Further Tests of Dynamically Loaded Beams," JOURNAL OF THE AMERICAN CONCRETE INSTITUTE, May 1959, p. 1215. Bibliographic notes in the papers cited tie in over 120 references.

F. T. MAVIS
Dean, College of Engineering
University of Maryland
College Park, Md.

Progress Passes Pioneers

SIR—I read with interest the editorial "The Future Civil Engineer" (ENR Feb. 25, page 128).

The editorial states that the fragmentation of engineering into a mounting number of specialties can place the civil engineer in a more commanding position in the future than he has ever enjoyed in the past.

In the colleges however, there is a swing away from civil engineering toward more exciting branches of engineering.

This situation, maybe, isn't too pessimistic, but the cure cannot be expected from the civil engineering educator alone. While the educators are seriously studying the problem (Conference at Cooper Union's Green Engineering Camp, Ringwood, N. J.), there is very little evidence of awareness about the problem outside the college halls.

The profession of civil engineering today is mostly represented by the generation of engineers who graduated from college about 25 to 40 years ago, when this country's rapid growth demanded quantities of college educated people for all fields.

The majority of these civil engineers advanced with time and contributed so much to the growth and progress of civil engineering that they are the true pioneers in the profession of civil engineering.

However today there are too many outdated civil engineers who refuse to accept the progress and latest developments in civil engineering, but still are in charge of a large number of finely trained younger civil engineers.

The other so-called more exciting branches of engineering made revolutionary progress during and after the Second World War, and forced out all engineers who didn't advance in the course of progress. This challenge is attracting young men.

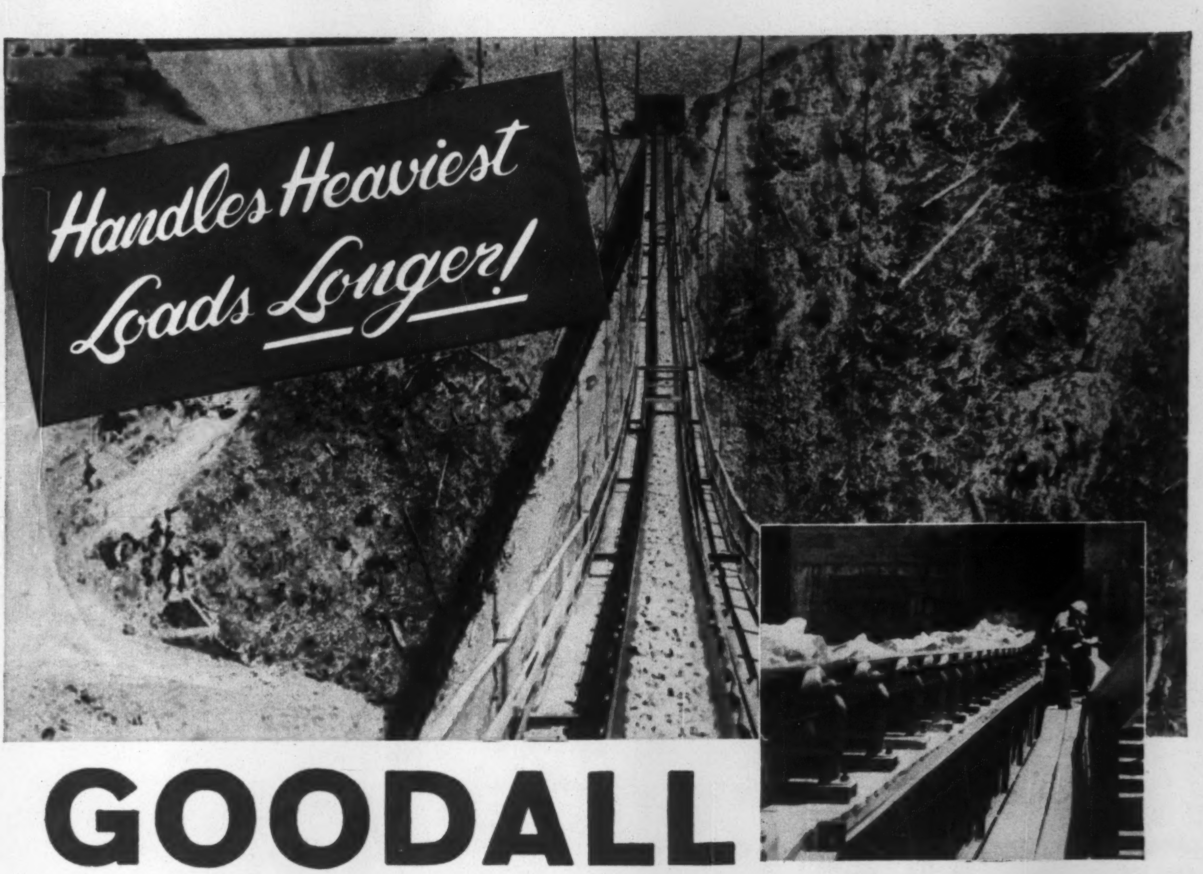
The outdated category of engineers together with the outdated building codes and regulations, I think, cast the blackest shadow in the entire profession of civil engineering today.

ERNEST KALVE
Chicago, Ill.

▶ It was with great satisfaction that I read your editorial "The Future Civil Engineer" (ENR Feb. 25, page 128).

It is time for the general public to understand that the civil engineer is not only a man in dirty dungarees and a hard hat.

Our handicap as civil engineers is that much of our work is done in the open. Every citizen can see the digging of foundations, pouring of concrete, erection of steel, and so forth. However the work which the civil engineer does behind the scenes, making a design which often has to overcome great dif-



GOODALL "SUPER TRIPLE-S"

THE *Super-Service* CONVEYOR BELTING

"SUPER TRIPLE-S" will pay for itself over-and-over again in the conveying of bulk materials under severest operating conditions—aggregates, crushed stone and rock, and abrasive ores, wet or dry. Especially suited for long center hauls where tension is great and extreme flexibility required. Service records prove exceptional freedom from costly shutdowns for repairs.

"If it's GOODALL, it MUST be Good!"

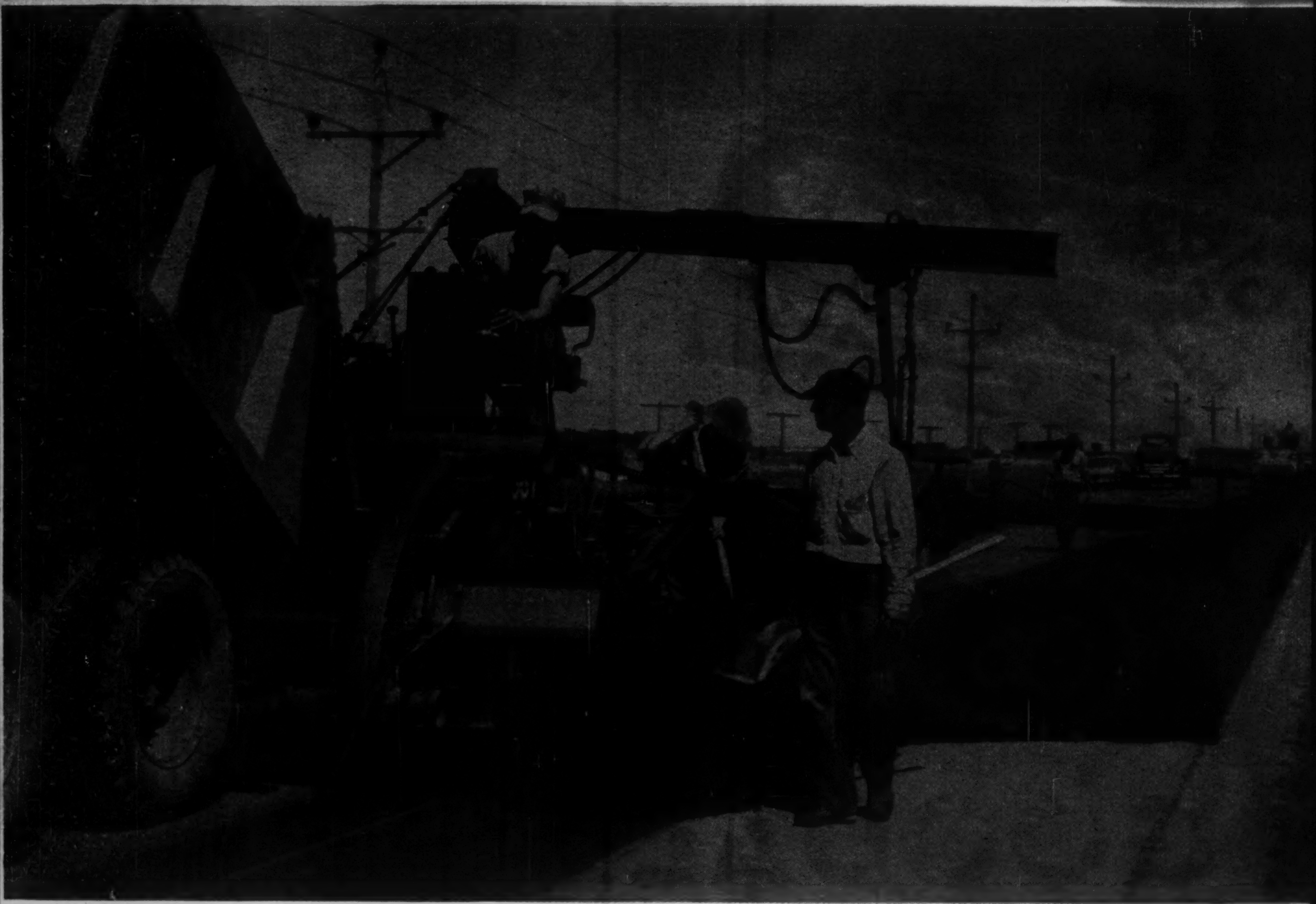
Contact our nearest Branch for complete information and prices, or write for Catalog describing "Super Triple-S" and other Goodall Quality Belting for the Contractor

Standard of Quality—Since 1870

HOSE · BELTING · FOOTWEAR · CLOTHING
AND OTHER INDUSTRIAL RUBBER PRODUCTS

GOODALL *Rubber Company*

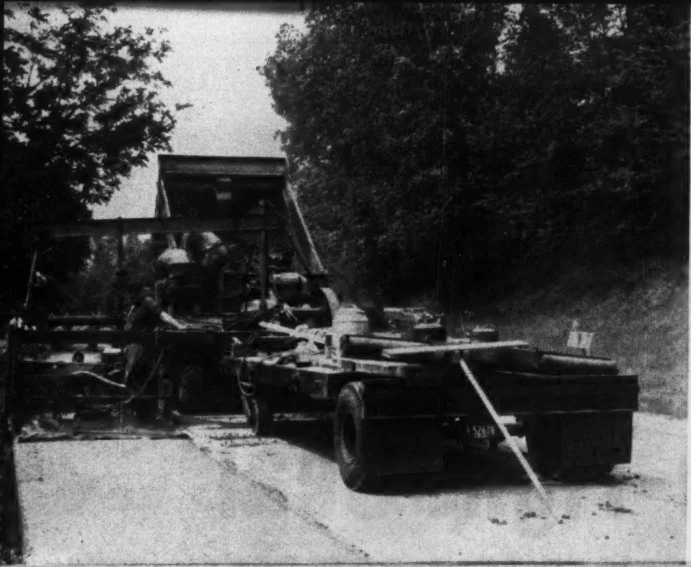
GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.
BRANCHES AND DISTRIBUTORS THROUGHOUT THE UNITED STATES.
IN CANADA: GOODALL RUBBER CO. OF CANADA LTD., TORONTO.



Five contractors each bought a Barber-Greene Road Widener and Shoulder Paver after seeing W. Hodgeman and Sons' machine perform on this 20-mile widening and resurfacing contract on U. S. 212 near Birds Island, Minn. General Supt., George McPherson states: "The Barber-Greene is the only rig that could have met state specs on both 9-ft. base widening and 6-ft. shoulder paving at speeds to 70 fpm. We laid the base course of emulsified asphalt using the hydraulically controlled strike-off attachment. On the last pass where pre-compaction and automatic leveling were required, we changed to our tamping-leveling attachment. On the 6-ft. wide and 2½" thick finish course we averaged better than 200 tons of hot mix hourly. This is the first time we've been able to handle this type job with one machine."

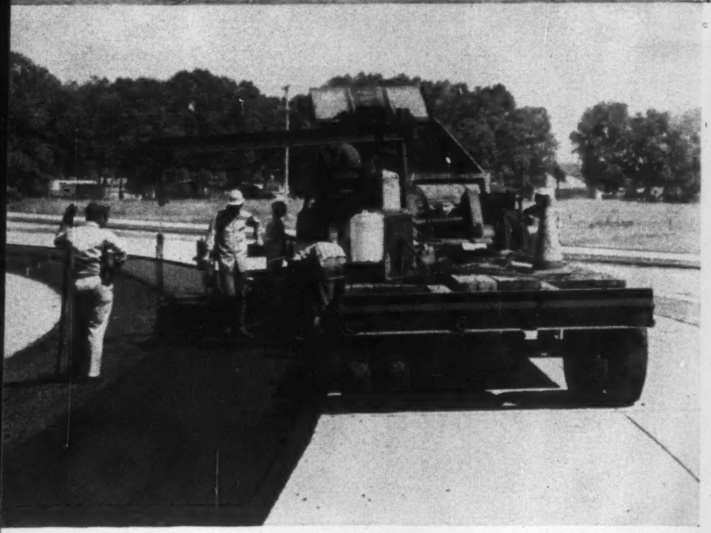
See your Barber-Greene Distributor for details on the only machine with interchangeable attachments for handling all types of widening and shoulder paving with all materials, including concrete. And check how much more you can earn with a machine featuring: NEW 2-UNIT DESIGN—greater stability with trailer-mounted attachments eliminates side drag steering problems; UNMATCHED PORTABILITY—10 mph under own power, or truck towed on its own trailer; and HYDRAULIC CONTROLS—on strike-off attachment that is adjustable while paving...hydraulic steering, jib hoist, self-cleaning hopper, and brakes. Hopper conveyor hydraulically controlled for both speed and position.

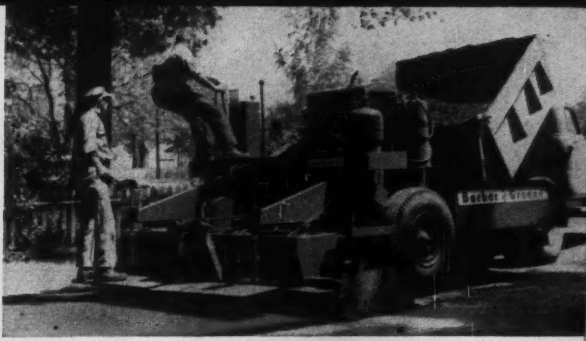
"ONLY WIDENER THAT COULD MEET STATE SPECS—PAVED SHOULDERS AT 70 FPM"



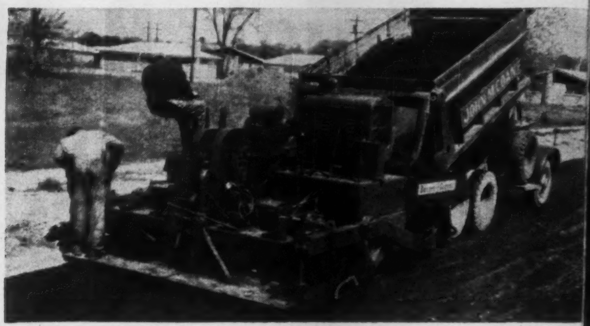
Versatile SJ-50 Road Widener and Shoulder Paver is shown improving traffic conditions on narrow road near Savanna, Ill., by making one-pass operation of laying 6-ft. concrete shoulder with exclusive vibrating concrete attachment.

SJ-50 paves 6-ft. asphalt shoulder around tight curve near Cheyenne, Wyo., without slowdown. Exclusive attachment, utilizing tamping-leveling principle with compaction before strike-off, assures finest work.





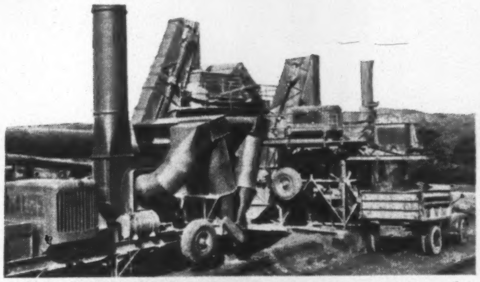
873 FINISHER—For all contractors with variety of scattered jobs who need extreme mobility. Paves on tracks, travels on rubber.



879-B FINISHER—Universal machine for contractors wanting greatest job range from a single machine.

SB-60 FINISHER—The ultimate in heavy-duty, high speed, high capacity, low maintenance asphalt paving. Offers highest production and lowest cost per ton mile. SA-60 crawler-mounted, SB-60 is pneumatic tired.

CONTRACTOR-PREFERRED FINISHER LINE



Choose from Barber-Greene's largest selection of 17 continuous and batch-type mix plants to complete the most profitable paving package available.

World's No. 1 Manufacturer of Asphalt Paving Equipment

Representatives in Principal Cities of the World

Barber-Greene

Main Office and Plant AURORA, ILLINOIS, U. S. A.
Plants in DeKalb, Illinois..Detroit..Canada..England..Brazil..Australia

CONVEYORS • LOADERS • DITCHERS • ASPHALT PAVING EQUIPMENT

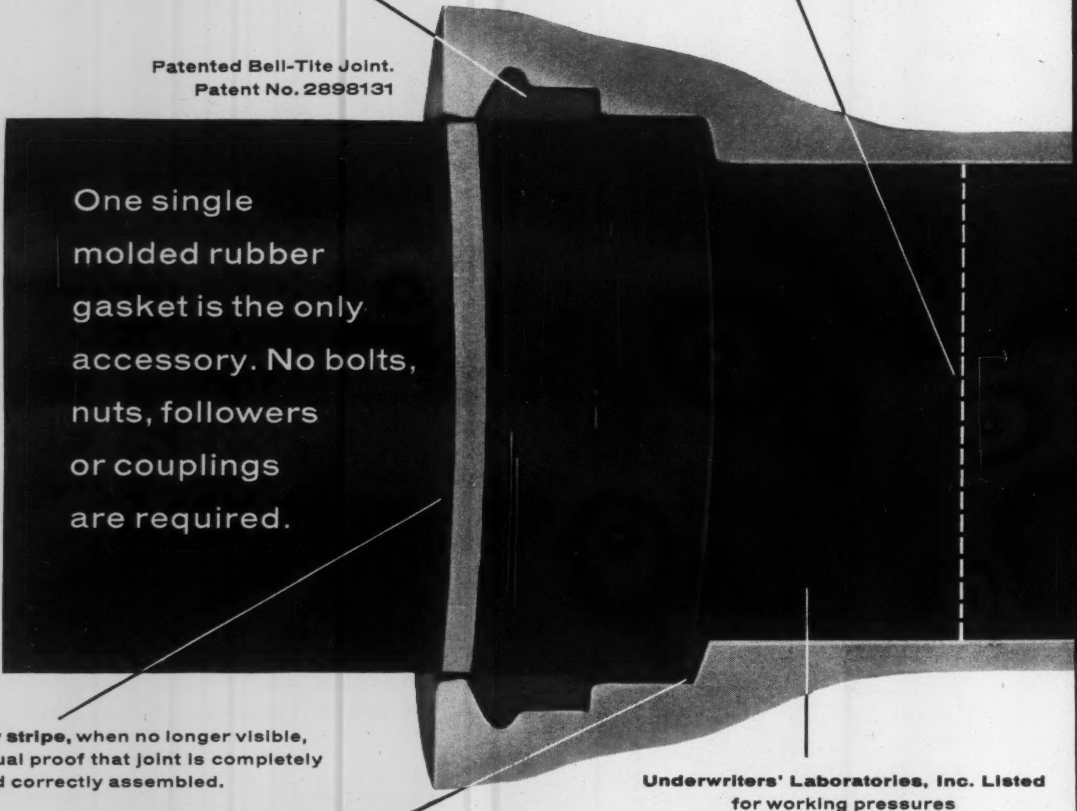
CLOW

Quick, Bottle-Tight Seal

Large, thick section gasket of long-life high durometer rubber forms pressure-tight seal.

Bell-Tite Joint Pipe available in diameters from 3" thru 24" in 18 foot lengths.

Patented Bell-Tite Joint.
Patent No. 2898131



One single molded rubber gasket is the only accessory. No bolts, nuts, followers or couplings are required.

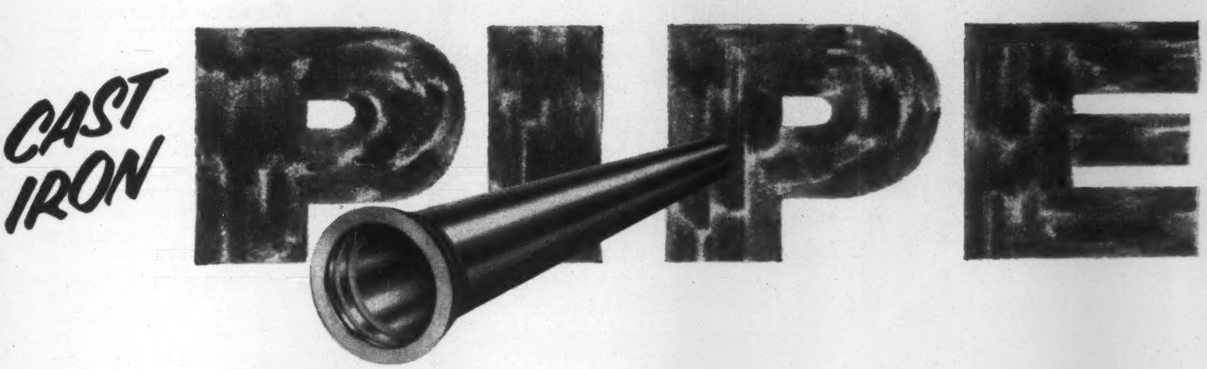
This yellow stripe, when no longer visible, provides visual proof that joint is completely and correctly assembled.

Underwriters' Laboratories, Inc. Listed for working pressures up to 350 psi.

Ample deflection to meet casual curves or grades is provided by space in socket of the bell.

CLOW CAST IRON PIPE

Cast Iron Pipe Plants at
BENSENVILLE, ILLINOIS • BIRMINGHAM, ALABAMA • COSHOCTON, OHIO



You can install

CLOW BELL-TITE® JOINT PIPE

as fast as you can dig a shallow trench

Pictures show CLOW 20″ Bell-Tite Joint Cast Iron Pipe being installed to provide water for a midwestern industrial development. CLOW Bell-Tite Joint Cast Iron Pipe was selected because of its proved long life and the ease and speed of installation. Hulett Corporation, contractors.

LOWER
pipe into trench

SWING
into open bell

SEAL for
pressure-tight
joint

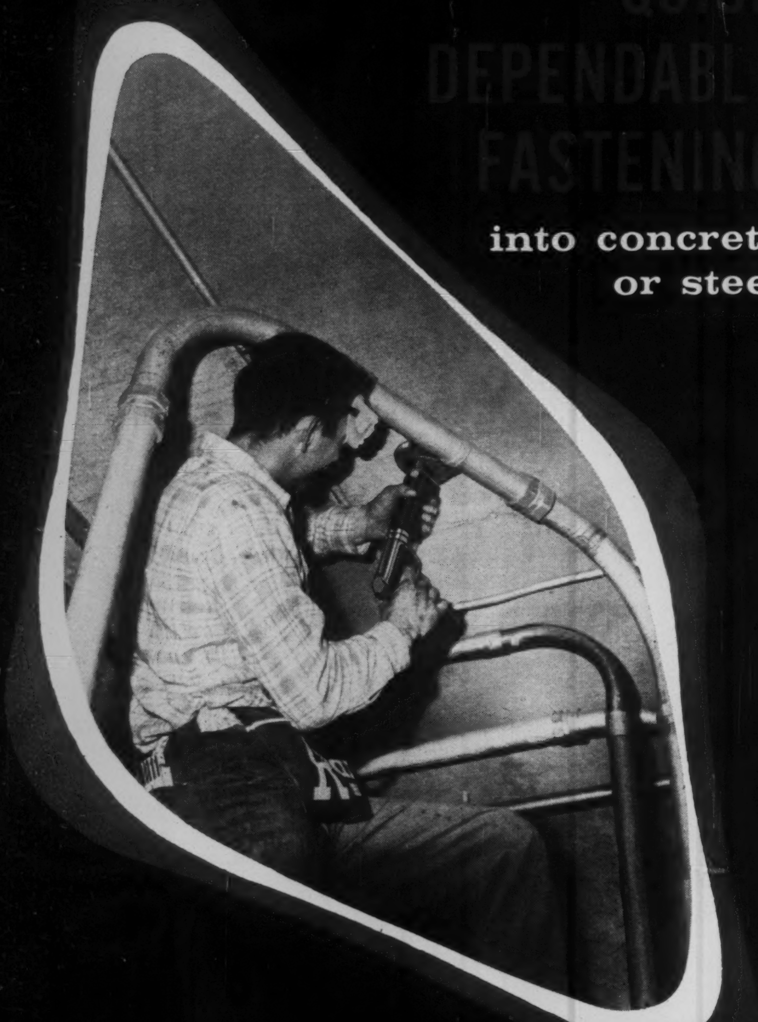
JAMES B. CLOW & SONS, INC.
201-299 North Talman Avenue, Chicago 80, Illinois

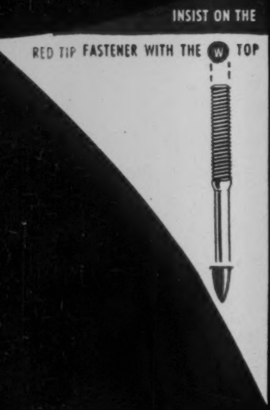
Subsidiaries:
Eddy Valve Company
Waterford, N.Y.
Iowa Valve Company
Oskaloosa, Iowa

Leading contractors use Ramset for

QUICK
DEPENDABLE
FASTENING

into concrete
or steel




INSIST ON THE
RED TIP FASTENER WITH THE W TOP

Whenever plans call for fastening into concrete or steel, Ramset does the job in a split-second. Ramset powder-actuated fastening has proved far more efficient and economical than old-fashioned methods. With Ramset you're assured of quick, easy fastening, even under the toughest conditions . . . and every fastener is guaranteed!

Ramset offers an amazing variety of rugged Red Tip fasteners and dependable powder charges . . . just right for every application. This wide selection of fasteners and charges means you pay only for what you need . . . you get lowest in-place fastener cost with Ramset!

Call your Ramset dealer (under "Tools" in Yellow Pages) today, or write direct to find out how Ramset can save you money.

Ramset® Fastening System

OLIN MATHIESON • WINCHESTER-WESTERN DIV. • 287-M WINCHESTER AVE. • NEW HAVEN 4, CONN.

ficulties, is not seen and therefore cannot be appreciated by the man in the street.

The general public believes that a civil engineer is a kind of glorified carpenter or rigger, doing work which anyone can do and for which civil engineering study is not required. They do not realize, that to obtain that little piece of paper called "diploma", requires four to six years of hard work. And that many students fail because they lack sufficient brains, perseverance, initiative or character.

During my 41 years as a civil engineer, I have worked in four continents, and nowhere else have I found civil engineers so poorly looked upon as in this country.

It is about time that the various technical institutions, societies, and the press educate the general public, and make them aware that the civil engineer is a highly trained technical man who is indispensable for the continuous development of this country.

CHARLES M. J. W. KOHLER
Consulting Civil Engineer
New York, N. Y.

Credit Where It's Due

Kaiser Engineers International, Inc., was the contractor on the Asuncion, Paraguay, municipal water supply system completed recently (ENR Feb. 25, p. 60). Rader and Associates was the architect-engineer.

For Your Calendar . . .

Municipal and Industrial Waste Conference, annual meeting, State College Campus, Raleigh, N. C., Apr. 7-8. Write: The Division of College Extension, P. O. Box 5125, State College Station, Raleigh, N. C.

Conference on Composite Design in Steel and Concrete for Bridges and Buildings, Case Institute of Technology, Cleveland, Ohio, Apr. 20. Write: John B. Scalzi, Department of Civil Engineering and Mechanics, Case Institute of Technology, Cleveland, Ohio.

American Welding Society, annual convention and exposition, Biltmore Hotel, Los Angeles, Calif., Apr. 25-29. Write: American Welding Society, 33 West 39th St., New York 18, New York.

ASCE Engineering Mechanics Division, structural mechanics conference. School of Civil Engineering, Purdue University, Lafayette, Ind., May 5-6.

Air Pollution Control Association, annual meeting, Netherland-Hilton Hotel, Cincinnati, Ohio., May 22-26. Write: APCA Annual Meeting, 2400 Beekman St., Cincinnati 14, Ohio.

World Power Conference, Madrid, Spain, June 5-9. Write: Brig. Gen. Steward E. Reimel, Secretary, U. S. National Committee of the World Power Conference, c/o Engineers Joint Council, 29 West 39th St., New York 18, N. Y.

Society for Experimental Stress Analysis, spring meeting, Hotel Severin, Indianapolis, Ind., May 18-20. Write: Society for Experimental Stress Analysis, P. O. Box 168, Cambridge 39, Mass.

International Association for Bridge and Structural Engineers, annual conference, Stockholm, Sweden, June 27-July 1. Write: Charles Antoni, Secretary of the U. S. Council, IABSE, Syracuse University, Syracuse, N. Y.

PLAN YOUR ENTRY NOW!

The Third Annual

ALFRED A. RAYMOND AWARD

ONE THOUSAND DOLLARS

OPEN TO ALL: Practicing engineers, engineering faculty, graduate students and undergraduates. This competition invites papers which will promote ingenuity, originality, and research in the field of foundation engineering as related to the *foundations for structures*. Any aspect of this broad field, theory or practice, is a fit subject. Deadline for all papers is September 1, 1960.

THE JUDGES: FRANK A. MARSTON, Partner, Metcalf & Eddy, Consulting Engineers, Boston, Massachusetts.

WILLIAM W. MOORE, Partner, Dames & Moore, Consulting Engineers, San Francisco, California.

RALPH B. PECK, Professor of Foundation Engineering, University of Illinois, Urbana, Illnois.

"These awards by Raymond International Inc., are a step in the right direction. By lending encouragement to research in the foundation field, they can stimulate interest in civil engineering research generally. More of it must be done if the art of construction is to advance."

—Waldo G. Bowman, Editor, Engineering News Record.

WRITE NOW FOR RULES AND REGULATIONS

ALFRED A. RAYMOND AWARD, Dept. E-2, Room 1214, 140 Cedar Street, New York 6, N. Y. Telephone: COrtlandt 7-7070.

SPONSORED BY RAYMOND CONCRETE PILE COMPANY

a Division of Raymond International Inc.

VERSATILE...
BIG
SMALL
HIGH
HEAD
LOW
HEAD
RUGGED
Flexible

That's Lock Joint Concrete Pipe!

Whether it be the largest concrete pressure pipe in the world, or a small diameter drainage pipe;
. . . . pipe for the highest heads common to water works practice, or pipe for only nominal pressure or partial vacuum;
. . . . pipe to resist extremes of overburden, or pipe to meet the complexities of industrial or plant piping;
. . . . LOCK JOINT can provide all these, and more.

You will also find it a dependable, durable, maintenance-free pipe of sustained high carrying capacity which is backed by a company with over a half century's experience in the development and production of concrete pressure, sewer, culvert and subaqueous pipe.

LOCK JOINT PIPE CO.
East Orange, New Jersey

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Kan. • Perryman, Md. • St. Paul, Minn. • Winter Park, Fla.

Pressure • Water • Sewer • REINFORCED CONCRETE PIPE • Culvert • Subaqueous

ENGINEERING NEWS-RECORD

Vol. 164, No. 14 April 7, 1960

Number of copies printed this issue 85,592

CONTENTS

Public Works Gets Set to Sprint 21
Eleven Projects in Delaware Development 23
Aluminum Award Goes Overseas 24
Earth Dam Is Washed Out in Brazil 25
Malpasset Dam's Failure Is Half Solved 25
San Diego Subs Get Bid Depository 26
Chicago Exhibit Hall Topped Out 28
Peaceful A-Blasts Depend on Geneva Outcome .. 32
Damsite Access (the Hard Way) 34
For a Bank: Dramatic Thin-Shell Roof 34
Precast Bearing Walls for Center 35
Cowtown Opens Expressway 35

FEATURES

Rolling Forms Speed Garage Construction 36
Swedes Drill, Blast Jet Airport From Rocky Terrain 40
High Earth Dam Plugs Narrow Canyon for Power 44

FIELD AND OFFICE

Formula for Proper Blasthole Spacing 53

RESEARCH AND DEVELOPMENT

Color-Coated Roads Aid Drivers 55

NEW PRODUCTS

'Jimmie' Offers V-6 and V-12 56
Big Diamond T Trucks Revamped 56
Chevy's Suspension Improved 61
'Champ' Pickups Give Visibility 61
Dodge Design Stresses Function 62
Harvester Off-Highway Line 62

MEN AND JOBS

B. A. Vallerga to Join LA Oil Company 65

BUSINESS AND FINANCE

Detroit's Competitive Tangle 98
March Awards Top February's by 14% 100

LABOR

Engineering Unionism: New Twist 103
The Teamster Tangle Thickens 104

Reader Comment 8
Calendar 14
Washington Observer 19
Obituaries 71
Books 73
Legal 78
Unit Prices 80
Materials Prices 81
Construction Reports . 82
Statistics, Indexes ... 97
Editorials 116

Picture Credits

25—left, UPI; right, Wide World; 28—Aero Lab; 34—top, World Bank; bottom, Baltazar Korab ©; 35—bottom, Fort Worth Star Telegram; 36, 38—Albert Rothschield Studios; 37—Plaza Photographers; 40, 41, 42—© Gosta Nordin through the American-Swedish News Exchange, N. Y.; 50—top, Bethlehem Pacific; 65—Barry Evans Photography.

Back Issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semiannual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

AND NOW, A PRIVATE EAR—One of the newest recruits of the House subcommittee investigating the Interstate highway program is Baron I. Shacklette, who was chief investigator of the House Special Subcommittee on Legislative Oversight, until he was found on the receiving end of a wire attached to a microphone hidden in Bernard Goldfine's hotel room. Mr. Goldfine was testifying about charges that he had given expensive gifts to Sherman Adams, then assistant to President Eisenhower. The subcommittee unanimously condemned Mr. Shacklette, who resigned. Now he has a $13,000-a-year job investigating highway work.

COSTS UP AGAIN—ENR's 20-Cities Construction and Building Cost indexes are higher this month. The Construction Cost Index at 813.58 sets a new record. The Building Cost Index at 555.23, however, remains below the record 556.01 set Aug. 20, 1959. Both indexes are based on 1913=100. Wage boosts are responsible for the cost increases.

EITHER WAY, THE FERRY LOSES—Merritt-Chapman & Scott Corp., with Dorman Long Ltd., an English firm, and Compagnie Francaise d'Enterprises of Paris has proposed a bridge across the English Channel. It would be 21 miles long, 100 ft wide and more than 200 ft above water. It would cost $560 million and take five years to build. A channel tunnel has already been recommended to the governments of England and France (ENR Mar. 31, p. 25).

FOR MISSILE HEADROOM—Workmen are raising the first of many highway bridges that require more clearance to meet the new requirements of the Interstate System (ENR Feb. 4, p. 23). The bridge is near Jackson, Mich. Hydraulic jacks were used to raise prestressed concrete girders and connecting diaphragms 1 ft 9 in. above the original position. Estimated additional cost: $18,000.

BUBBLES HAVE A BLOWOUT—The natural effervescence of air under pressure in porous ground is finding concentrated outlets along old piles on a Boston sewer tunneling job. Last week the third minor blowout since the job started spewed mud 15 ft in the air at the surface. Down below in the tunnel, you could hardly tell the difference, says an engineer of MacLean Grove & Co., Inc., the contractor.

SPRING IS LEAKING OUT ALL OVER—Melting snows, ice jams and torrential rains wrought havoc throughout the nation this week. Record breaking high water flooded many areas in the Middle West, washing out highways and bridges. Biggest break occurred in central Illinois where the Mississippi River burst a levee and flooded 30,000 acres of rich farmland.

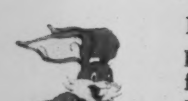
"Call FOSTER . . . rent the piling and get savings PLUS"

One sure way to cut costs on your next steel-sheet piling job is to use Foster's Piling Rental Plan. You get savings *plus* the assurance of all the piling you need, when you need it!

Foster's nationwide warehouses and field stocking points carry all standard sections — plus corners, crosses and tees — plus hammers, extractors and other driving accessories — all available for immediate shipment.

Ask for the exact sections, the exact lengths the job requires. All you pay is one low fixed rental rate. No more hazardous and costly driving with substitute "make do" sections; no more tying up cash in big piling inventories.

For all types of piling, for complete stocks of highway and construction products, call the Foster specialist near you. Write **L. B. FOSTER CO.** for Piling Catalog EP-4, Pittsburgh 30, New York 7, Chicago 4, Houston 2, Los Angeles 5, Atlanta 8, Cleveland 35.



Faster From Foster

Rental Steel-Sheet Piling • Pipe Pile • H-Pile • Lightweight Piling • Pipe • Rail

WASHINGTON OBSERVER

- **Corps layoffs coming**
- **More houses than we know about?**
- **Opinions on public housing**
- **Anti-discrimination efforts fail**

● **The Corps of Engineers will have to lay off engineers, draftsmen, inspectors and other such civilian personnel.** Reductions won't hit all districts, but cuts appear inevitable in the South Pacific and North Atlantic divisions, among others. There's a shortage of work.

One reason: a decline in Army and Air Force construction handled by the Engineers. Construction spending for those two services this year is $250 million below fiscal '59; Air Force spending alone will decline another $250 million next year.

California's Gov. Pat Brown has protested the impending cuts in the South Pacific Division. He wants to know why the Army plans to lay off experienced engineers at a time when water resource development in the area requires their skills.

Some of the reduction will come from normal attrition—not hiring to fill new vacancies. Those who are laid off will be referred to other districts or agencies where there are job prospects.

● **Homebuilders may have been erecting 20% more houses than available statistics indicate.** That speculation comes from government officials working on a new basis for counting starts, which will be put into effect soon.

The Census Bureau has been working on new statistical standards since it got the chore of estimating housing starts last year. (It took over the task from the Bureau of Labor Statistics when BLS took on the job of analyzing unemployment-employment statistics.)

Improved and expanded reporting might show an additional 200,000 or more starts a year, government officials estimate. It depends on what additional categories of units are to be included in the new series. New farm homes, not counted up to now, are sure to be included.

● **A variety of views on the problems and the future of public housing will be published next week.** They have been assembled in letter form by the Housing and Home Finance Agency from labor leaders, city planners, builders, economists, municipal authorities, business leaders and minority groups.

These two notes recur: The government has some responsibility in helping to provide decent housing for low-income families; some form of public assistant is essential.

The 150-page booklet is called "View on Public Housing." It contains no official commentary or conclusions. A limited number of copies is available. Write the Housing and Home Finance Agency, Washington 25, D. C.

● **The Senate last week buried a proposal that would have established a permanent group to take over the work of the President's Committee on Government Contracts,** which has been seeking equal job opportunities for Negroes on government contracts. On the motion of Republican Leader Everett Dirksen (Ill.), the Senate tabled the proposal—an amendment to the civil rights bill. It had been deleted earlier by the House.

BORDEN
First IN FLOOR GRATING
ELIZABETH, N. J.

HERE'S HOW BORDEN FLOOR GRATING CUTS COSTLY FIELD CORRECTIONS

Insures correct dimensions, fit, and placement . . .

1. A shop drawing of the job is submitted to the customer for approval, when necessary. This plan shows the size and shape of the grating area—how grating clears all obstructions.
2. Each finished panel is carefully checked for accuracy of dimensions.
3. Each panel is plainly marked with its number to insure quick, easy installation.
4. The entire platform is laid out on our shop floor. Over-all dimensions and obstruction openings are checked against shop drawings.
5. Erection diagram showing panel mark numbers is supplied for field installation.

BORDEN METAL PRODUCTS CO.

Gentlemen:
"Please send me NEW 1960 BORDEN Catalog"

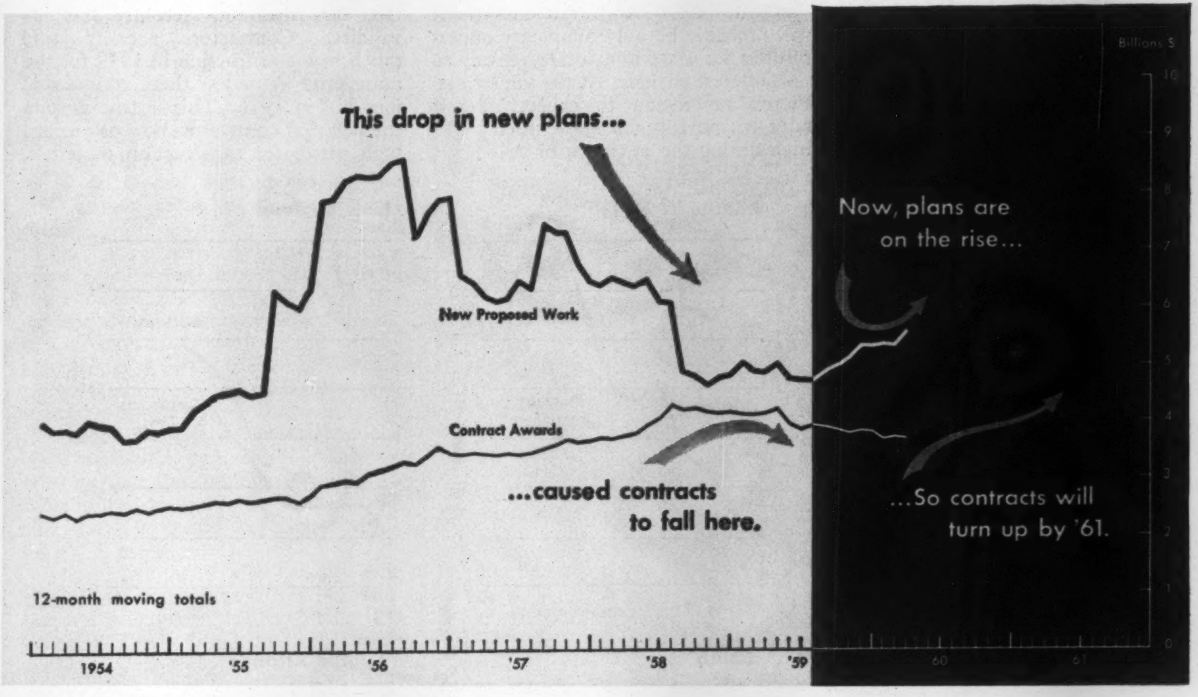
NAME ....
TITLE ....
COMPANY NAME ....
ST. AND NO. ....
CITY AND STATE ....

Write today for free 16-page catalog showing all basic types of grating; more than 30 dimensional drawings of sub-types; eight safe load tables for steel and aluminum grating.

BORDEN METAL PRODUCTS CO.

"Greatest name in gratings"

815 Green Lane   Elizabeth 2-6410   Elizabeth, N. J.
Plants at: Union, N. J. — Leeds, Ala.
Conroe, Texas — Beeton, Ontario



Public Works Gets Set to Sprint

By James Webber

The 1957-58 contract award recession is a dimming memory for those construction men who capitalized on the rebound in private heavy construction in '59 and '60. But thousands of other contractors still live in a recession because their bread and butter is public works–spread sparingly on the bidding tables during the past year.

This belt-tightening will soon be over, boys. The main course you've been hoping for is on the way.

To start with, highways and bridge contracts are going to soar this month. In fact, contractors should chalk up more highway and bridge awards than in any other April-June period on record. Widespread bid calls in recent weeks have already alerted contractors to this prospect. (ENR will pin down prospects state by state in the April 21 issue, which will report the results of ENR's 1960 survey of state highway departments' contracting budgets.)

What's really new is that even without this resurgence in highways and bridges, the state and local construction market is about to turn the corner. The tip-off: New projects other than highways and bridges have been pouring on the drawing boards in sharply increased volume during the past six months. The chart above shows this reversal of the long downtrend in proposed projects entering the planning stage from late '56 through the summer of '58. After bottoming out over the last half of '58 and most of '59, proposed projects have spurted.

It will take several more months for this increase in planning activity to produce enough new jobs coming up for bids to tilt the contract curve up. It generally takes 12 to 24 months for a step-up in plans to bring an increase in bid calls. So it's possible that by next fall contracts for other types of public construction will follow the lead of highways and bridges.

Certainly contractors can count on a substantial increase in many types of public works awards by the spring of 1961. So in planning for 1960 operations–hiring and training crews and ordering new equipment–contractors can feel assured that these preparations will continue to pay off into next year.

Meanwhile, contracts for projects other than highways and bridges will probably remain below their 1958 and 1959 rates. That's because the long lag time between the start of plans and the call for bids will stretch the effects of the 1956-58 slide in proposed work well into 1960 advertising and contracting schedules.

The two necessary ingredients are in hand for the upturn. A rise in plans alone doesn't guarantee a future increase in contracts. The second prerequisite for a contract upturn is money.

Increasing sales of state and municipal construction bonds this year, up 3% over '59 according to ENR figures for the first three months, is evidence that the money is now abuilding in anticipation of letting more contracts.

In fact, the news from the financing side is doubly good, because not only are more bonds sold, but the voters are approving more bond issues for future sale. Bond approvals in the first three months jumped 64% over last year, the BOND BUYER reports. The $455 million approved is the highest January-March total since 1956, when new plans hit their peak rate.

(*Turn the page*)

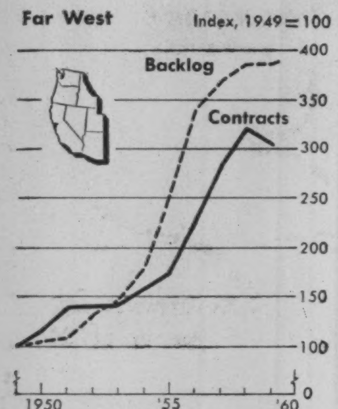
ENR's Jim Webber *is an economist who shuns ifs, ands, and buts in his forecasting. You'll find no hedging in his indication of a public works upturn, which he bases largely on ENR's exclusive Backlog figures.*

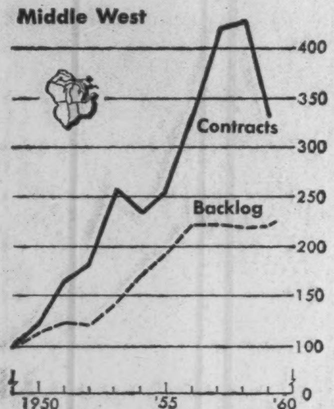
Still another favorable development of the financing side is this year's turndown in interest rates on municipal bonds. Cheaper interest probably helped to entice a larger volume of new bond issues into the capital market.

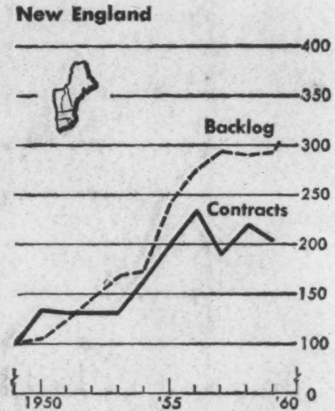
If interest rates move further below their late '59 high or just stay close to where they are now, the outlook for state and local financing and thus for future contracts is that much brighter.

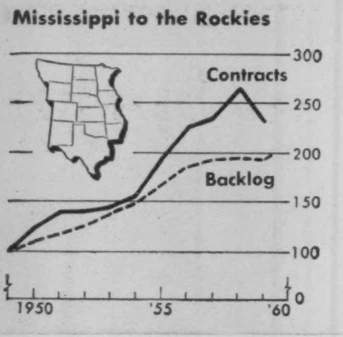
But even if demand for new capital leads investors to raise the price of money, this would probably not keep public works contracts from rising. That's because it is becoming increasingly apparent that interest rates are "up" to stay. Downward movement will probably be only temporary opportunities for state and local agencies to save interest charges. At the same time, there's no reason to expect interest rates to move much above their 1959 high during the next year or two.

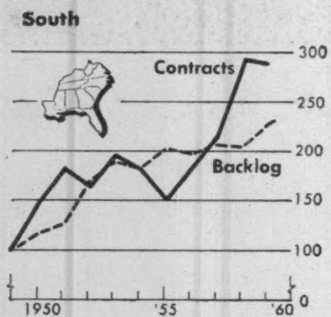
This is a good time to buy construction. Although some taxpayers have blamed rising construction costs for dimming their enthusiasm for needed new public works proposed in 1957 or '58, this reasoning recently lost its validity. Contractors actually sold much new construction in 1959 for the same price as or less than, comparable jobs bid in 1956. This is true despite the fact that contractors now pay record high prices for construction materials,

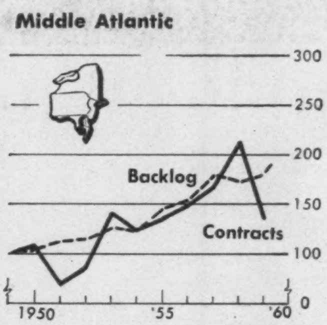












Schools Spark Municipal Bond Sales Rise . . .

Compiled by ENR, in millions of dollars

	First Three Months					Change '59–'60 %
	1956	1957	1958	1959	1960	
Total Bond Sales	1,218	1,440	1,875	1,645	1,699	+ 3
Heavy Construction	717	650	1,150	995	832	−16
Waterworks	132	122	133	165	87	−48
Sewerage	139	104	113	118	115	− 3
Bridges	12	1	4	8	6	−31
Highways	240	129	300	122	152	+25
Earthwork, dams, waterways	4	6	352	264	125	−53
Other	191	288	248	317	348	+10
Electric & gas utilities	...	55	51	29	85	+190
Airports	...	66	36	147	53	−64
Parking facilities	...	9	4	6	14	+132
Unclassified	...	158	157	135	196	+45
Buildings	501	790	724	650	867	+33
Schools	428	595	471	387	594	+53
Housing	20	42	20	31	12	−61
Other building	53	153	233	232	261	+12

While State and Municipal Contracts Dip

Reported by ENR, in millions of dollars

	First Three Months			Change '59–'60 %
	1958	1959	1960	
Total Contract Awards	1,655	1,673*	1,636*	− 2
Heavy Construction	1,085	1,137	1,162	+ 2
Waterworks	58	113	76	−32
Sewerage	145	141	137	− 3
Bridges	102	152	212	+39
Highways	619	622	643	+ 3
Airports	17	27	21	−22
Tunnels & subways	4	33	19	−42
Earthwork-dams-waterways and other	140	49	54	+10
Buildings	570	536	474	−12
Other than housing	465	473	394	−17
Public housing	105	63	80	+27

**Include Alaska and Hawaii:*
Alaska—$0.8 million in '60; $0 in '59.
Hawaii—$11.5 million in '60; $0 in '59.

manpower, machines and money. To offer these bargains, contractors have trimmed profit margins and are working their ingenuity overtime to cut costs.

Today's low prices largely reflect the fierce competition for new jobs. (See p. 98 for a sample.) This race is accelerating in 1960 as fewer public works jobs become available. With contractors' capacity far exceeding even the record amount of public works taken on in 1958, there's plenty of room for demand to expand without tipping the scale against public works buyers—and driving bid prices significantly higher.

The slower pace of initiating new plans in 1956-59 reflected mainly these three factors: the general business recession, which sharpened voter opposition to added tax burdens and curbed tax revenue growth; the rapid increase in state and local spending for construction or other purposes outstripped the rise in revenues, creating serious fiscal problems; and climbing interest rates on state and municipal bonds, up some 60% or more between mid-'55 and mid-'59 (based on Standard & Poor's data).

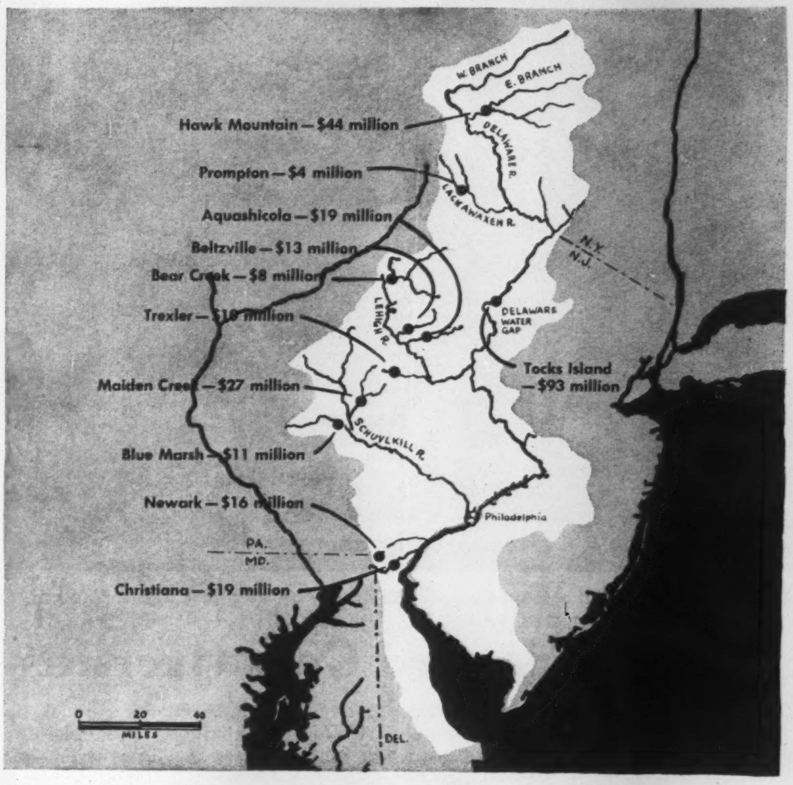
These same factors that crimped new plans had much less effect on contracting schedules. In fact, contracts soared to a record high in 1958, saving many a contractor's business in '58 because private work slumped to a five-year low.

By contrast, state and local construction sagged in '59 and '60, while private works surged ahead strong.

Thus, the public works market of 1957-60 has been a "contra-cyclical" influence in the heavy construction market—a stabilizer that helps to keep total new business on a more even keel in this traditionally cyclical market.

That this can be a good thing for the industry and its customers is poignantly demonstrated by what happened in the rip-roaring boom of 1956. Then, private construction and public works both rocketed so high that materials shortages cropped out, equipment got scarce and labor overtime became common. Price premiums, delivery delays and overtime pushed costs up fast. Contractors quickly passed along the increases—and anticipated further increases by bidding sharply higher prices on new projects. Many customers paid premium prices and some others were temporarily priced out of the market. Inflation probably stole $2 billion or more in facilities needed by the U.S. economy.

This new balance-wheel function played by the public works market is largely a result of the long lag between planning start and construction start. It's not intentional, but while it's happening the industry might as well enjoy it . . . and profit by it.



Eleven major projects are the backbone of the Corps' latest . . .

Delaware Development Plan

A near-final recommendation for the development of the Delaware River Basin has been released by the Philadelphia District Corps of Engineers. The result of several years of intensive study, the plan has as its backbone the construction of 11 major reservoirs that would cost $264 million.

Public hearings will be held in the four states affected (Pennsylvania, New York, New Jersey and Delaware) beginning next week. Then the final plan goes to the state governors and other civil authorities, the Chief of Engineers and finally, to Congress.

The 50-year program is aimed at multiple benefits: water supply, flood control, power, pollution control and recreation.

Here are the 11 major projects in the recommended order of development:

Project	*Location*
Beltzville	Pohopoco Creek, Pa.
Blue Marsh	Tulpenhocken Creek, Pa.
Trexler	Jordan Creek, Pa.
Prompton*	Lackawaxen River, Pa.
Tocks Island	Delaware River, N. J., Pa.
Newark	White Clay Creek, Del.
Christiana	Christina River, Del.
Aquashicola	Aquashicola Creek, Pa.
Maiden Creek	Maiden Creek, Pa.
Bear Creek*	Lehigh River, Pa.
Hawk Mountain	E. Branch Delaware R., N. Y.

*** Modification of existing flood-control project.**

In addition to the major reservoirs, studies of the intermediate upstream tributaries show the need for 42 small flood-control reservoirs.

Only two projects, Tocks Island and Hawk Mountain, will have hydroelectric facilities. Installed capacities would be 46,000 kw and 21,000 kw respectively.

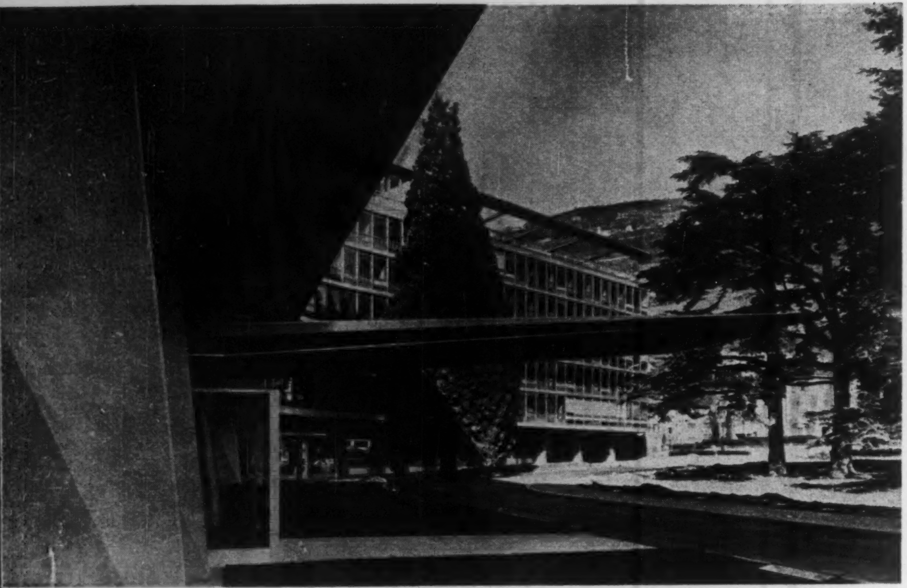
Basis for the water supply benefits outlined in the plan is the anticipated doubling of the 21-million population of the basin over the next 50 years. Water withdrawals from the Delaware and its tributaries are expected to increase fourfold to 14 billion gpd.

The Corps claims the recommended projects would eliminate 35% of the average annual flood damage.

Flood protection in the uppermost reaches of the basin would remain under existing soil conservation and land treatment programs of the Department of Agriculture, according to the plan.

Although the increased flows afforded by the program will have an incidentally beneficial effect on pollution control, the Corps emphasized the importance of maintaining and improving the existing control programs.

The major water control projects will provide recreation facilities for 23 million visitors annually.



This building on Lake Geneva won $25,000 for architect Jean Tschumi.

Aluminum Award Goes Overseas

Looking for original and creative design in aluminum, the American Institute of Architects reached out to Switzerland to make its 1960 Reynolds Memorial Award.

Winner of the $25,000 annual prize, the largest international architectural award, is Prof. Jean Tschumi for his design of the seven-story Nestle Administration Building on Lake Geneva in Vevey, Switzerland.

Criterion for the award is design of the foremost contemporary structure in the world whose creative use of aluminum could significantly influence the architecture of our time, according to the AIA. Walter Gropius, chairman of the AIA jury that picked this year's winner, said the jury unanimously decided that "Jean Tschumi has made sensitive use of aluminum in a previously little explored manner."

Entrance canopies of aluminum cantilevering 33½ ft from the building, vertical louvers and horizontal sunbreakers are the first and most noticeable applications of aluminum on the building. But Professor Tschumi also used the metal from baseboard to light fixtures throughout the interior.

The AIA jury noted that sun-control devices—they vary in scale and extent around the Y-shaped building—in no way impair the design of the structure. In fact, outside they help to cut up the expanse of windows while in no way obstructing the view from within.

Basement and ground floors of the headquarters are reinforced concrete. Upper floors are welded steel frame with concrete filled steel decking. In the main wing, a central core at the Y-end of the building contains elevators and service ducts. A double spiral staircase, framed in steel but sheathed in aluminum, rises there from ground level to roof.

Too many standard shapes plus many existing building codes may be holding U. S. designers back, according to the AIA jury. Commenting on other structures nominated for the 1960 award, the jury in its report said that "the lack of imaginative use and sensitive detail in some United States entries may reflect the ready availability of standard and pre-engineered building components in the United States and restraints imposed by U. S. building codes and insurance requirements."

The jury was impressed by the general high standards of design but felt that aluminum in curtain walls or as a sheathing material is well established and by itself not sufficient to qualify under terms of the award.

Professor Tschumi has architectural offices in Paris and in Lausanne, Switzerland. In addition to his practice, he has been professor of architecture at the Polytechnic School of the University of Lausanne since 1943. Between 1954 and 1958 he served two terms as president of the International Union of Architects.

Serving with Mr. Gropius on the award jury that picked Professor Tschumi's entry were Philip Will, Jr., FAIA of Chicago; Arthur Fehr, FAIA of Austin, Tex.; C. E. Pratt, FRAIC of Vancouver, B. C.; and James M. Hunter, FAIA of Boulder, Colo.

BPR Joins Investigators Of a Much Tested Highway

The 51st Street by-pass in Tulsa, Okla., has become one of the most tested sections of the Interstate Highway System as the Bureau of Public Roads joined three other agencies in drilling cores from it.

A BPR crew will check on the findings of the three other groups.

A special subcommittee of the House Public Works Committee is investigating reports that the road shows wear only a year after its completion (ENR Mar. 31, p. 20). The subcommittee also took cores.

A Tulsa grand jury drilled the highway before indicting three partners of Layman & Sons, of Tulsa, on a charge of fraud in construction of the by-pass.

The Oklahoma State Highway Department made core tests last September and reported no evidence of faulty construction.

Levitt Lifts Racial Bars At His New Jersey Tract

Homebuilder William Levitt will integrate his 15,000-unit Levittown III in Burlington, N. J. Thus ends two years of controversy and litigation over his original intention to restrict the development to white buyers.

The new policy follows a decision by the New Jersey Supreme Court that the state's antidiscrimination law applies to housing sold with mortgages insured by the Federal Housing Administration (ENR Feb. 18, p. 150).

First sale to a Negro will probably be made this month.

Although Levitt & Sons has appealed the verdict to the U. S. Supreme Court, the public announcement indicated the company had little hope of a reversal.

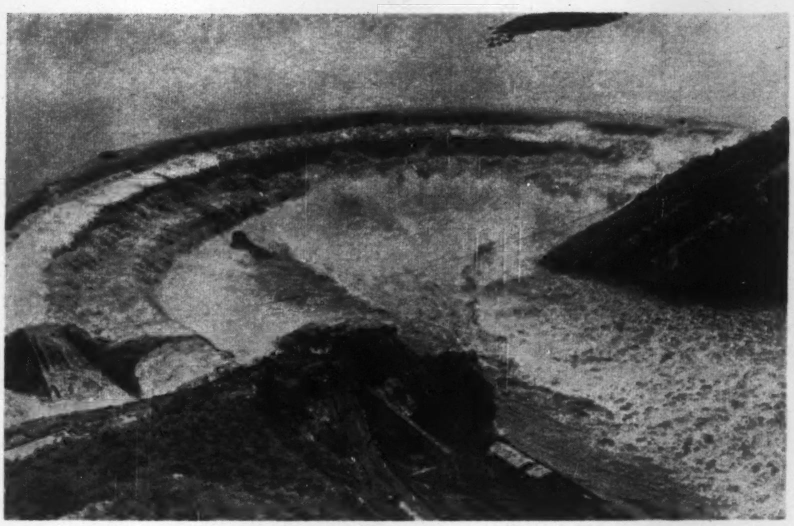
Work to Start This Month On Second Norfolk Tunnel

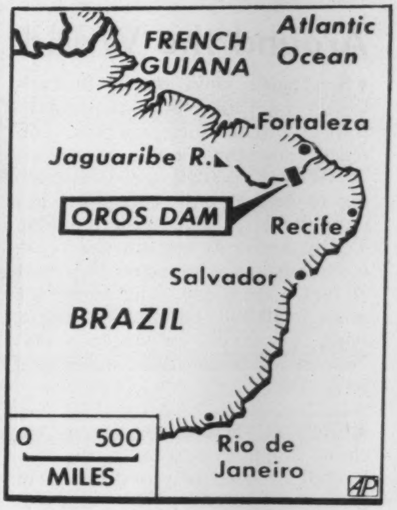
Construction of a $22-million second vehicular tunnel between Portsmouth and Norfolk, Va., will begin this month, according to an announcement by the Elizabeth River Tunnel Commission.

The commission awarded an $11.6-million contract for the underwater section of the tunnel to the Diamond Construction Co., Savannah, Ga. Diamond will construct 300-ft-long tunnel sections at an off-site location, float the sections into position, then sink them into a trench.

The new tunnel will measure 4,194 ft, portal to portal, and have approximately 600 ft of approach roadways.

Design and construction supervision of the second tunnel is handled by Parsons, Brinckerhoff, Quade & Douglas, New York consultants.





Earth Dam Washes Out in Brazil

An 85-ft-high, 1,500-ft-long earth dam still under construction partly gave way to overtopping floods in northeast Brazil. The high water went over the embankment first at one side, then the other, and finally took out a center section.

Sketchy information reaching ENR indicates that the structure, Oros Dam, has a clay core, sand shell and a stone facing reinforced with cement. The job reportedly involves over 3.5 million cu yd of earthwork.

Workers attempted to avert the dam failure by cutting an emergency spillway through the embankment.

Construction costs so far are said to total over $5 million.

The washout occurred after five days of very heavy rain. The avalanche of water turned loose by the failure caused heavy damage to towns downstream, but advance warnings enabled most persons to escape.

Floods over large areas of northern Brazil are reported to have caused the wash out of hundreds of small dams.

Oros Dam is a project of DNOCS, a Brazilian government irrigation agency. ENR sources report that it is an all-Brazilian project.

Plans call for a 130-sq-mi reservoir stretching 25 miles up the Jaguaribe River and storing 800,000 acre-ft of water. Also projected is a hydroelectric plant with 15,000 kw of generating capacity.

Scheduled completion date was early 1961.

Malpasset Dam's Failure Is Half Solved

A rock rupture under the left-bank foundations, followed by a shift of the abutment, caused the collapse of Malpasset Dam (ENR Dec. 10, 1959, p. 24). That's the verdict of the team of top French engineers investigating the catastrophe.

Their preliminary report to the Minister of Agriculture was released quietly. The report ruled out design errors or faulty construction as possible causes. Recheck of the Coyne and Bellier design calculations for the arch verified the original results.

Blocks of concrete scattered as far as 4,500 ft downstream from the shattered site provided ample evidence that the dam was well built, according to the report. For one thing, blocks from the lower part of the dam were found with pieces of bedrock still attached to them, indicating the foundation-to-bedrock joint had not failed. Another potential weak point, the lift joints, got a clean bill of health when a concrete sample with a lift joint was tested out at essentially the same strength as other samples. All the samples from the blocks had acceptable strength in both compression and tension. After the prophyritic aggregates were checked for alkaline reaction, the investigators concluded that the concrete, steel and placement conformed to standard practices.

From the outset the rock under the left-bank foundations rated as the most likely cause of the dam's collapse. But the investigators ran down several other hypotheses, some of them spawned in the hysteria that followed the catastrophe. Sabotage, earthquakes, meteorites, explosion of munitions found in the lake bed, and a shock wave set up by the opening of the sluice valve were all eliminated in the report as possible causes.

With the cause of the collapse pinned down, the investigators hope now to determine exactly how the rupture of the rock happened. Some of the points they want to clear up are: Whether the watertightness of the bedrock was adequate; how infiltration of water occurred in the dihedral block of bedrock that was carried away on the left bank (the downstream side was practically a continuous plane, but the upstream side was a series of planes corresponding to tectonic fissures); the effect of blasting for a road near the dam; the effect of the torrential rains that preceded the catastrophe.

To get the answers, the investigators plan to make direct tests on the rock in a gallery on the downstream side of the site and to make seismic measurements.

Although the preliminary report states quite clearly that the investigators hope to come up later with recommendations "to prevent the recurrence of a similar catastrophe," there is no indication that they intend to answer the big question—could the possibility of the rock shift have been predicted or prevented, and if so, who was responsible? A legal investigating commission will answer that question.

Around the World . . .

• **Sic transit rapid transit**—Boston's high-speed trolley line, designed to solve the commuter problem and relieve downtown traffic congestion (ENR Nov. 5, 1959, p. 30), is proving to be not only unpopular, but unprofitable. The Metropolitan Transit Authority line into the Western suburbs was expected to attract 35,000 riders a day. The break-even point is 30,000, but the line is carrying only 26,000 passengers a day. Now it has a deficit of more than $400,000.

• **Enclosed mall**—The largest enclosed shopping mall east of the Mississippi is slated for construction in Delaware Township, N. Y., at a cost of $20 million. Sixty retail stores will front on a heated and air-conditioned street enclosed by a precast, prestressed concrete roof.

• **They're off**—Engineering's two ambassadors to Latin America are on their way—they'll be back from the five-nation tour in time to report to the annual meeting of the National Society of Professional Engineers in Boston in June. NSPE picked the pair for the study tour as the result of a contest tied to a fund raising effort. R. D. Chipp and Beatrice A. Hicks won the assignment. They're man and wife and both PE's.

• **Paving of the green**—Ireland's Ministry of Transport and Power has let contracts for construction of a $2.8-million airport near the city of Cork. It will have two runways, one 4,500 ft and the other 3,800 ft, designed to permit future extension. Completion is set for next year.

• **All roads lead to the fair**—The New York World's Fair Corp. has arranged for construction of five expressways to carry people to its 1964 exposition in Flushing Meadow Park. They'll cost $94 million. Other transportation lined up so far includes subways, buses, trains, sightseeing boats that will travel between Manhattan and the fair grounds, and a helicopter service that can carry 2,500 persons per day between the fair and mid-Manhattan.

• **Composite design conference**—Experience with composite design of buildings and bridges will be aired April 20 at Case Institute of Technology, Cleveland. Registration fee of $5 covers cost of textbook.

• **Houston brewery**—Construction of a $30-million brewery for Anheuser-Busch, Inc., will be started early next year in Houston. The brewing firm has asked the Sverdrup and Parcel Engineering Co. of St. Louis to draw up the plans.

• **Dallas market center**—A $35-million market center in Dallas will comprise a 10-story construction materials mart, a trade mart, home furnishings mart, and Market Hall. Architects are Harwell Hamilton Harris and Harold Berry, both of Dallas. Construction on the materials center will begin in late 1960.

• **Big gas bill**—Department of the Interior proposes $225 million of construction for 12 extraction plants in a move to conserve scarce helium. The plants would be located along existing natural gas lines and reportedly save 52 billion cu ft of helium that would otherwise be lost through the kitchen stove.

• **Soviet tidal power**—Tass, the Russian News Agency, says the Soviet Union is planning to build two tidal power stations. The first will be built in the eastern part of Mezen Bay, White Sea, which has the Soviet Union's highest tides, about 23 to 33 ft. The second is planned to be built on Lumbovsky Bay of the Barents Sea.

• **Steel expansion**—The iron and steel complex of the Italian government's Institute of Industrial Reconstruction will spend $700 million over the next five years to double its steel production and triple its output of cast iron. The largest project in the program will be construction of a $270-million iron and steel works at Taranto.

• **Delaware River bridges**—The County Planning Board of Burlington County, N. J., is considering construction of two new vehicular bridges over the Delaware River and two marine terminals on the left bank of the river.

• **New Zealand skyscraper**—A 23-story building, the city's tallest, will go up in downtown Auckland. Estimated to cost $4.5 million, the 260-ft-high structure will be built by the Kerridge-Odeon theater organization. Rigby-Mullan, New Zealand architects, are the designers.

New Bid Depository

San Diego subs establish curb on bid shopping

A bid depository system has been established by the Construction Subcontractors Association of San Diego. It will operate under the name of the Bid Depository of San Diego County.

It is a voluntary operation aimed at eliminating bid shopping. Any awarding authority—architect, engineer, owner, government official, general contractor—may certify the bid depository as the official trustee through which subcontractors, suppliers or others can submit their bids on a specific project.

There is no charge for use of the depository by awarding authorities or general contractors. But once the depository has been appointed for a specific job, the awarding authority must award the contract to the low acceptable bidder in each category for which competitive bids were requested. Categories of work include electrical, plastering, plumbing, painting, roofing and the work of other subs and suppliers.

Bonded employees of the organization receive the sealed bids from the subcontractors, time-stamp the envelopes, and place them in locked boxes until the scheduled bid opening.

Awarding authorities may reject a bid from any bidder, by marking the unopened bid enveloped "rejected," signing it, and returning it to the bid custodian.

The operation of the organization will be financed by a percentage levy on the value of the bid of each successful subcontractor bidder. The fee is ½ of 1% of the bid, with a minimum charge of $5 and a maximum of $250.

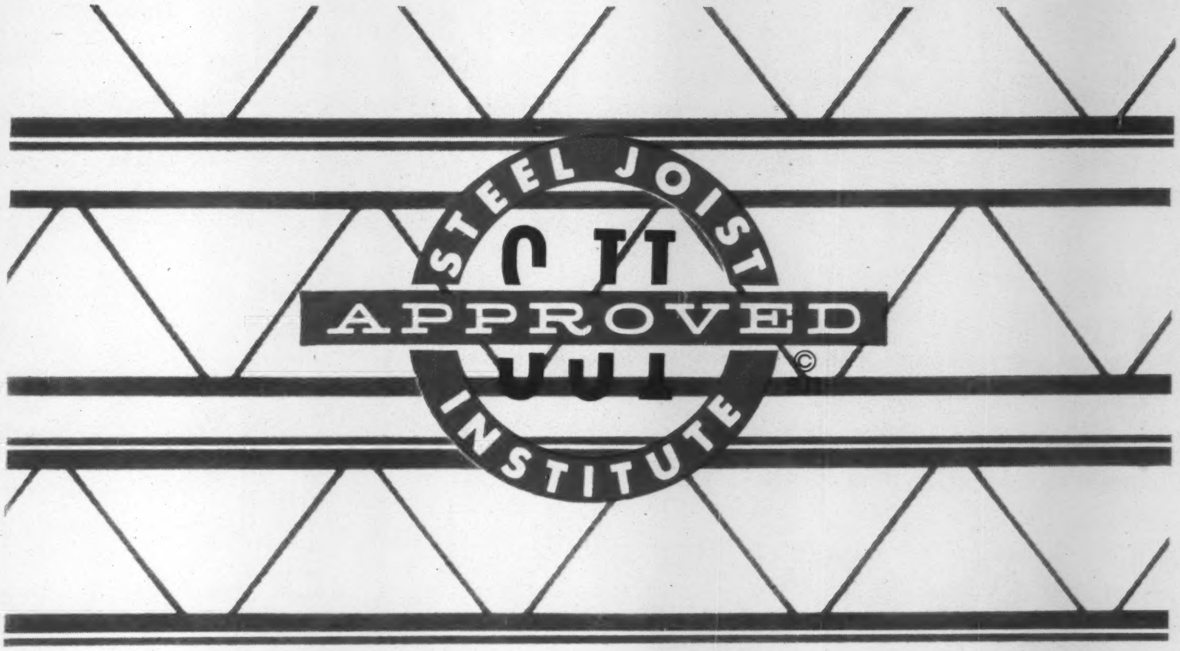
Other cities with bid depositories are Seattle, Columbus, Dallas, Ft. Worth, Houston, Fresno, San Francisco, Stockton and St. Paul (ENR Jan. 29, 1959, p. 77).

New York Building Code Still Alive—But Barely

New York State still has a state building code, though its existence is guaranteed for only another year and in precarious form at that.

At the close of this year's session of the legislature last week, the lawmakers passed a compromise bill that extends the life of the State Building Code Commission but subordinate to the State Division of Housing (ENR Mar. 17, p, 116).

The legislation is a stopgap measure similar to a short-term bill passed last year. That bill continued the commission within the Housing Division but without appreciable funds of its own.



THE STORY BEHIND THIS SEAL

This is more than just the Seal of Approval of the Steel Joist Institute. It is the symbol of a 32-year-old dedication to the welfare and progress of an important segment of the design and construction industries.

What is the Steel Joist Institute?

It is a voluntary association, organized in 1928, of open web steel joist manufacturers. Membership is available to any producer of open web steel joists who elects to manufacture joists in accordance with the standards and practices as adopted by the Institute.

What is its purpose?

The Steel Joist Institute is a nonprofit organization made up of manufacturers actively engaged in the fabrication and distribution of open web steel joists. It was organized to place the industry on a sound engineering basis. Its objectives are to establish methods of design and construction for open web steel joists, to provide test and research data for public dissemination, to assist in the development of appropriate building code regulations, and to publish information relative to the proper use of steel joists in the interest of safety and the public welfare.

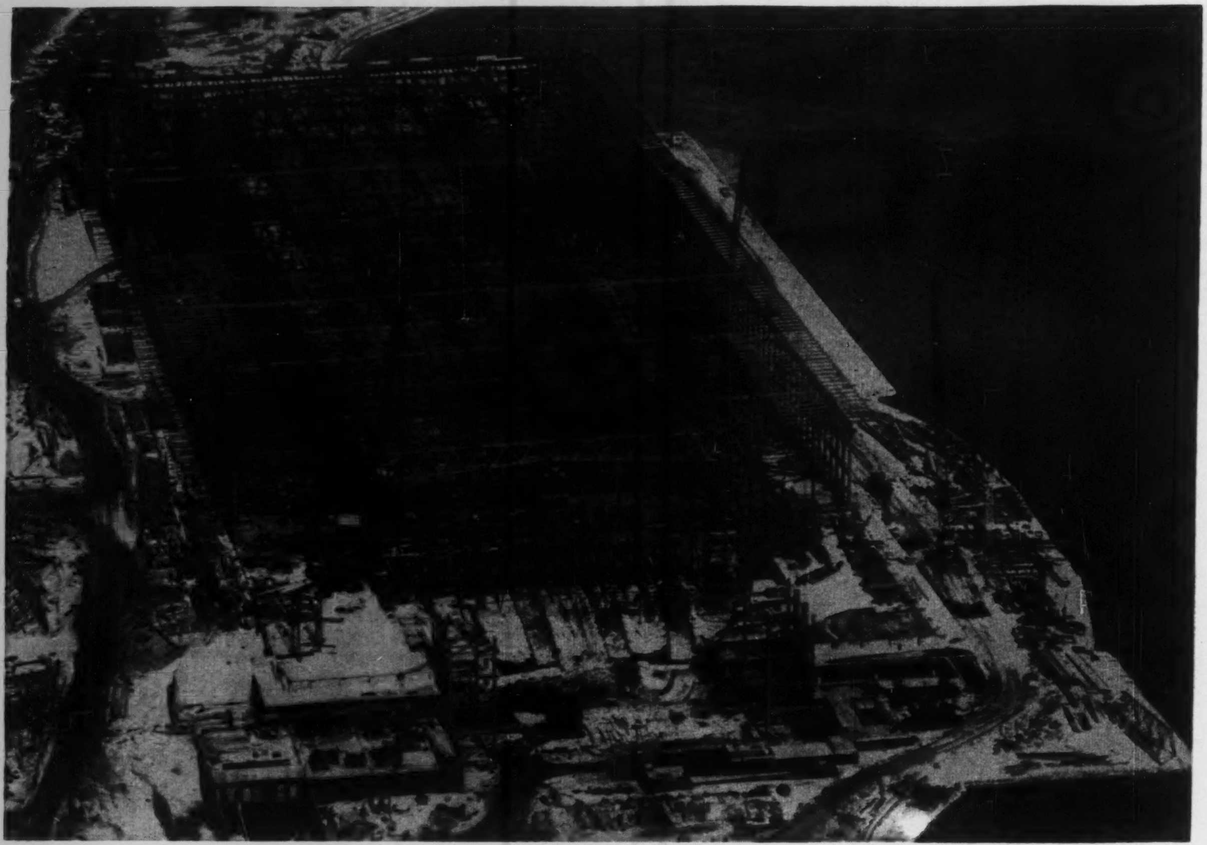
What are its accomplishments?

The Institute has made substantial practical contributions to the building construction industry. It has developed and published a comprehensive manual of standard specifications, load tables, and technical bulletins to assist the architect, engineer, and contractor; conducted research and testing of open web steel joists, bridging and cantilever members; initiated a thorough, effective quality verification program for "S" Series joists and a recommended Code of Standard Practice applicable to steel joists.

Inquiries concerning the Steel Joist Institute should be sent to the Managing Director, Steel Joist Institute.

STEEL JOIST INSTITUTE

1346 Connecticut Avenue, N.W. • Washington 6, D.C.



Chicago Exhibit Hall Topped Out

Steel for Chicago's $34-million Exposition Center was topped out late last month when workmen hoisted the last of 7,000 tons of framework into place 120 ft above ground level.

The roof of the 1,050 x 340-ft building is carried on 18 cantilever trusses spaced 60 ft apart the length of the structure. Each truss has a 210-ft central span and 65-ft cantilever arms (ENR Dec. 18, 1958, p. 26).

Erection of the steel, which started last December was by two crawler cranes and two travelers. The crawlers have 120-ft booms with 30-ft jibs and maximum lifting capacity of 125 tons. The travelers are 60-ton tower cranes with 105-ft booms and 20-ft jibs, mounted on 35-ft-high triangular towers.

Steel erection was performed by the American Bridge Division of U. S. Steel Corp. under a $2.3-million contract. Most of the 7,000 tons of steel was rolled at U. S. Steel's South Chicago Works, and fabricated at the Gary (Ind.) plant of American Bridge. Some of the steel was fabricated in Memphis, Tenn., and barged up the Mississippi River and the Illinois Waterway, to the site.

When the lakefront Exposition Center is completed in mid-November it will offer the most modern of exposition facilities.

Located only 2½ miles from the center of Chicago's Loop area, the Exposition building will have 310,000 sq ft of usable exhibition space. Movable walls will permit two or three conventions or expositions to be held simultaneously. The larger of two auditoriums will seat 5,000 people.

Kitchen facilities will be provided to serve a banquet for 25,000. There will be a full-service dining room seating 650 and a self-service restaurant that can accommodate 1,200 people per hour.

There will be 17 meeting rooms ranging in size to accommodate from 25 to 2,000 persons. Complete facilities will be installed for radio and television productions.

All facilities for expositions and conventions will be contained in the 1,050 x 340-ft Exposition Hall which will be completely air conditioned. A three-lane tunnel extending through the entire length of the building will provide rapid loading and unloading service for bus, taxi, or private automobiles. There will also be 13 truck entrances to serve the exposition area. Hydraulically operated ramps will permit placing the beds of the trucks at street level, if desired.

The building will be enclosed with sculptured panels of precast concrete, and with glass enclosure along the east side to give a panoramic view of Lake Michigan.

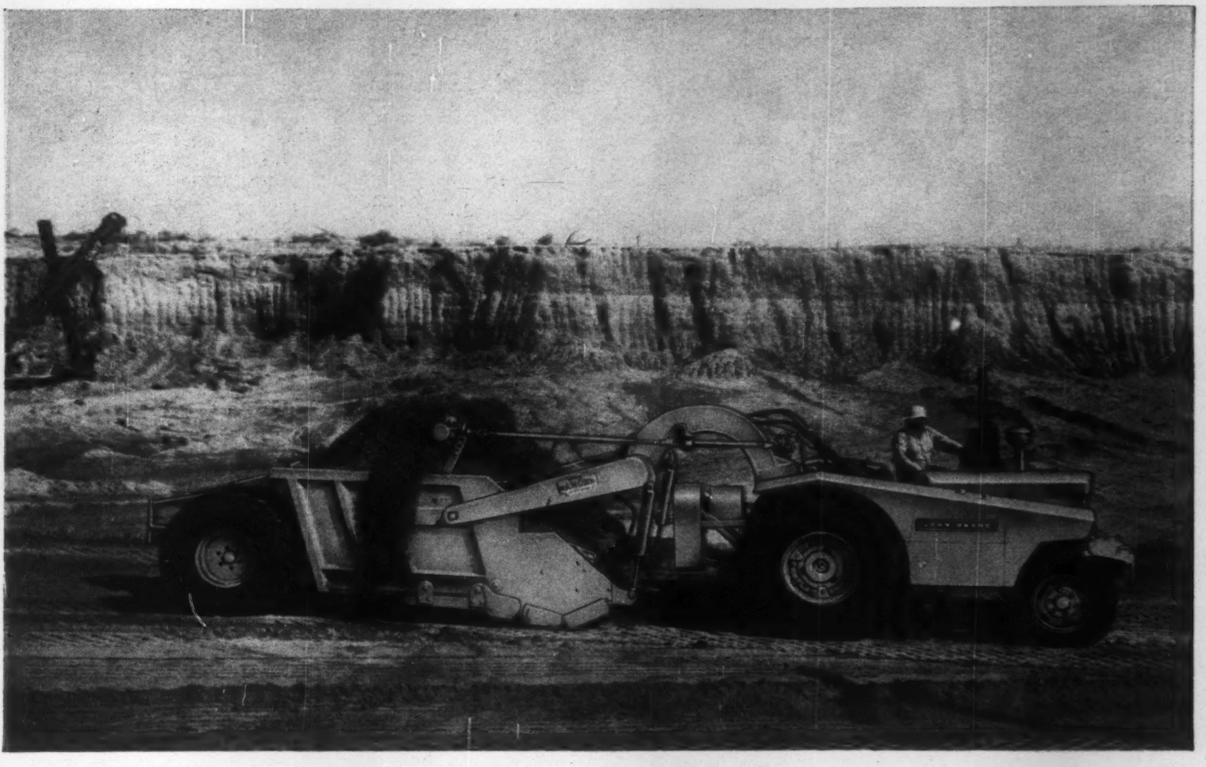
Clear height above exposition floor is 40 ft at the center of the roof trusses and 30 ft at the supporting columns, which are spaced 210 x 60 ft. A secondary truss system spanning 60 ft between the trusses carries steel joints and purlins and a poured gypsum roof. The cast-in-place reinforced concrete exposition floor is designed for a live load of 400 lb per sq ft. It is a two-way joist and slab floor carried on cast-in-place concrete columns supported on heavy steel piles driven to bedrock.

Robert J. Cantrell is project manager for Alfred Shaw, chief architect on the project. R. G. Bledsoe is construction manager for the owners, the Metropolitan Fair and Exposition Authority. Gust K. Newberg Construction Co. is the general contractor, with a $12.3-million contract.

The $34-million project is mainly financed with a $25-million bond.

The JOHN DEERE 840 with HANCOCK SCRAPER

Cuts roadbuilding costs from fill to finishing



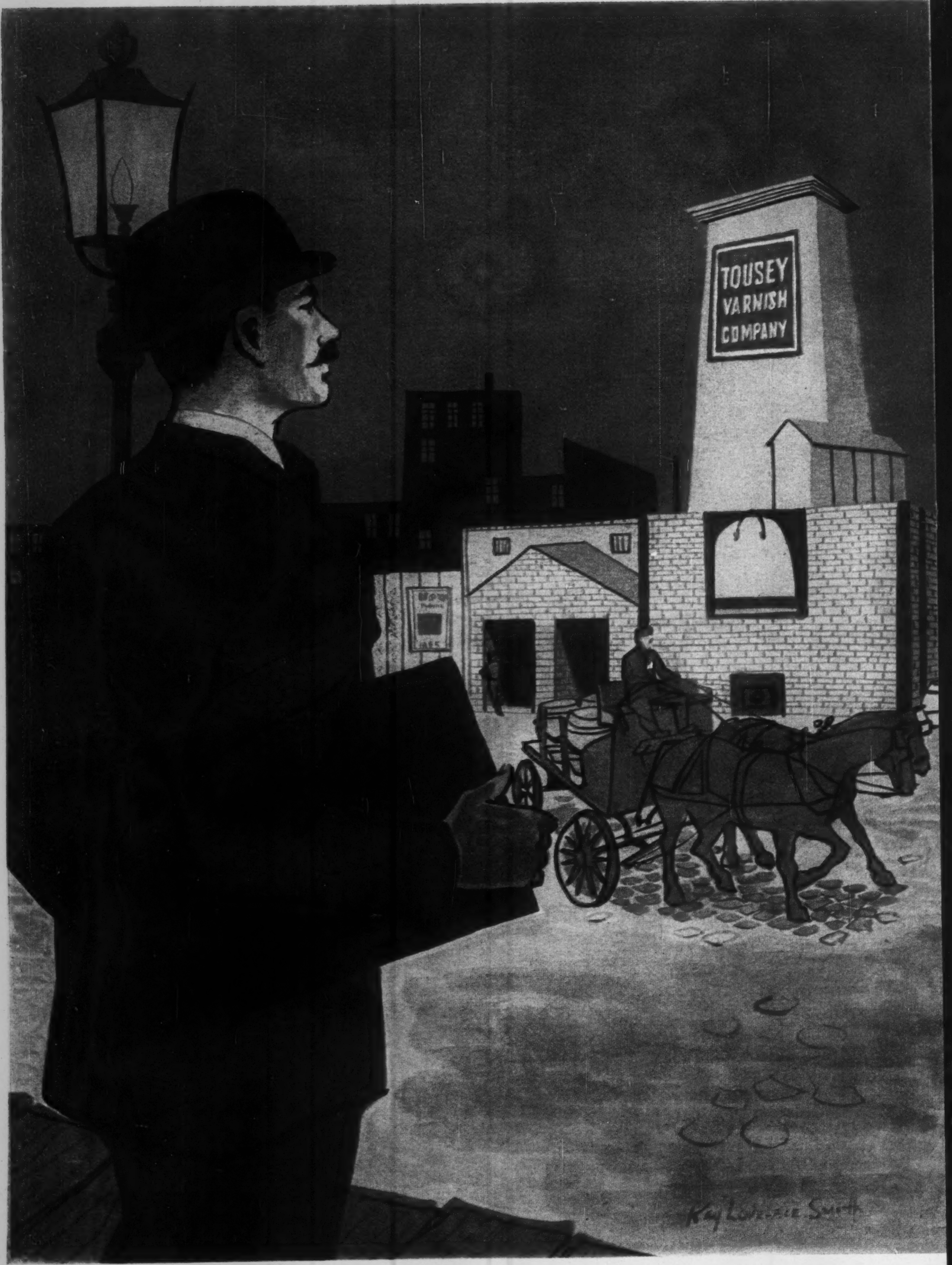
No need to tie up a lot of high-cost equipment—the thrifty John Deere "840" Diesel with 7-1/2-yard elevating scraper takes over by itself—without a pusher. Slat-type elevator builds its own heaped loads—breaks up clay for fast hydraulic ejection, even spreads.

Preferred for finishing and street work, too, the unit U-turns within standard 30-foot curbs, and has a transport width of less than 8 feet.

Many contractors have purchased this equipment with the help of the John Deere Credit Plan. For the information you need, consult your John Deere Industrial Dealer through the classified telephone directory, or write direct today.

JOHN DEERE
INDUSTRIAL DIVISION
3300 River Drive
Moline, Illinois

JOHN DEERE JOHN DEERE *"Specialists in Low-Cost Power with a Heavyweight Punch"*


TOUSEY VARNISH COMPANY
Kay Lovelace Smith

Our 75th year

CHAPTER ONE

The Constitution of the United States was a brief 110 years old when Chester A. Tousey founded the Tousey Varnish Co. in 1885.

The great Chicago fire had become history and a new faith in the future of this midwest metropolis was flourishing. Mr. Tousey was possessed with an abundance of this belief when he constructed his modest plant at 560 South Canal Street. He comprised the entire staff in the beginning, producing, delivering and selling Tousey products.

The next ten years passed rapidly, increased sales and managerial problems brought an expanded staff and need for large quarters. Thus in 1895, the company moved into a new establishment at 520 West 25th Street.

The pattern of expansion in both personnel and production facilities continued. New products were added to the ever growing line and close to the turn of the century a laboratory was set up and operated on a full-time basis for product research. A three story building was added to the existing plant and large storage tanks were placed underground.

Thus Tousey, with these evidences of a healthy growing company passed through the first stages of its history.

Individual attention to customers' needs, dedication to the manufacturing of quality products and a sincere effort to maintain these standards at all times proved a successful formula for expansion.

(to be continued)

OUR 75th YEAR
1885-1960
TOUSEY PRODUCTS
DURACOTE for DURABILITY

Tousey Varnish Co. manufactures a full line of finishes for application by Dipping, Flo-coating, Hot Dipping, Automatic Spray, Electrostatic Spray, Airless and Hot Spray. Tousey is a major supplier of finishes to manufacturers of Farm Machinery, Road and Construction Machinery, Automobile and Trucks, also representative manufacturers of products made of metal.

TOUSEY VARNISH COMPANY

Chicago Division: 520 WEST TWENTY-FIFTH STREET • CHICAGO 16, ILLINOIS • VIctory 2-2200
Quad-Cities Division: 2500 EIGHTH AVENUE • EAST MOLINE, ILLINOIS • PHONE 35295

ADVERTISEMENT

Kiplinger Tells How to Make Your Money Grow with the Boom

How to live better and make more money in these exciting boom years is explained in detail in a special study by W. M. Kiplinger, famous business analyst and Washington authority.

This timely volume is called, "How to Make More Money in the Boom Years Ahead." It shows you scores of ways you can capitalize on money-making opportunities arising from expanding population, new products, new leisure, new methods of doing business.

You get specific directions showing smart ways to handle details of your income, savings, job, business, investments, retirement . . . to make your money grow, protect your capital, your savings, from inflation.

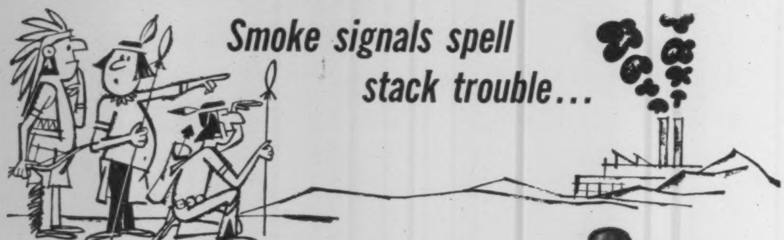
For example: How to safeguard the buying power of your dollars. Which businesses will gain—which lose in years ahead. Where the boom towns of tomorrow will be. New ways to raise capital for a business. High pay jobs of the future in business, government, overseas. How to get more out of your mortgage, real estate, insurance. Planning now to get your children into overcrowded colleges. What securities will benefit by the boom. Franchise businesses worth going into. How to set up an inflation-proof retirement program. Smart money-making, money-saving plans for people on fixed incomes, small businessmen, investors, young couples, heads of families . . . everything you need to know to come out of the boom with your future secure.

A copy is being made available to you FREE with a 13-week trial subscription to The Kiplinger Letter—both together for only $4 (Full value $7.95. You save $3.95 by acting now).

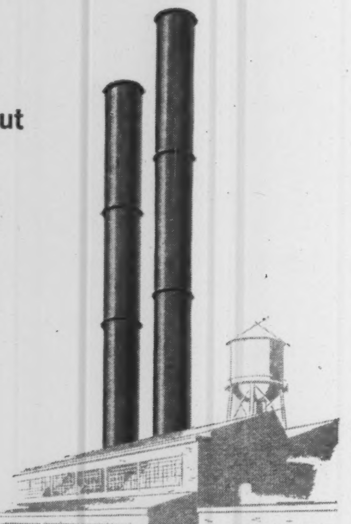
The Kiplinger Letter every Monday morning supplies key information you need—inflationary signals to watch for, business activity and trends, new legislation, labor, taxes, prices, new products—any significant development. Keeps you posted on how to ride safely and profitably through today's exciting times . . . protect your business and personal interests.

Just tear out this ad and return it to us today. Attach check for $4, or tell us to bill you. Either way you get FREE book plus 13-week trial of The Kiplinger Letter. (Offer open to new subscribers only.) Address The Kiplinger Washington Letter, Room **4637**, 1729 H Street, N.W., Washington 6, D. C.

Smoke signals spell stack trouble...



unless you're equipped with A. O. Smith smokestacks . . . glass-protected inside and out



Glass-protected smokestacks give you:
- A selection of colors
- 3 to 5 times longer life than unlined steel stacks
- Corrosion resistance regardless of excess acid condensate
- Low maintenance, no painting — glass can't rust
- Light weight—lower foundation cost
- Lower cost — glass protection now within reach of all

For bulletin containing all the facts, write Dept. CE-40.

Through research . . . a better way

A.O.Smith
CORPORATION
SMOKESTACK SALES
PROCESS EQUIPMENT DIVISION
P. O. BOX 584 • MILWAUKEE 1, WISCONSIN

Plowshare Prospects

Peaceful A-blasts depend on outcome at Geneva

Two imponderables will play a big role in determining whether anything comes of current U. S. preparations to explore peaceful applications of nuclear blasts.

One important factor will be the progress of negotiations in Geneva for a treaty banning nuclear tests. The other will be a pending Administration decision on what provisions for peaceful testing it should insist be in a treaty, if one is signed.

Chances of agreement on a test ban now look better than ever. Prime Minister Macmillan and President Eisenhower last week accepted in principle the Soviet demand for a moratorium on currently undetectable underground explosions, pending perfection of detection methods.

The $1-million job of digging a shaft 1,200 ft deep with an 1,100 ft tunnel leading off from the bottom will get under way immediately in the salt beds about 25 miles southeast of Carlsbad, N. M. Invitations to bid on the construction phase of the project are being issued by the Atomic Energy Commission's Albuquerque operations office.

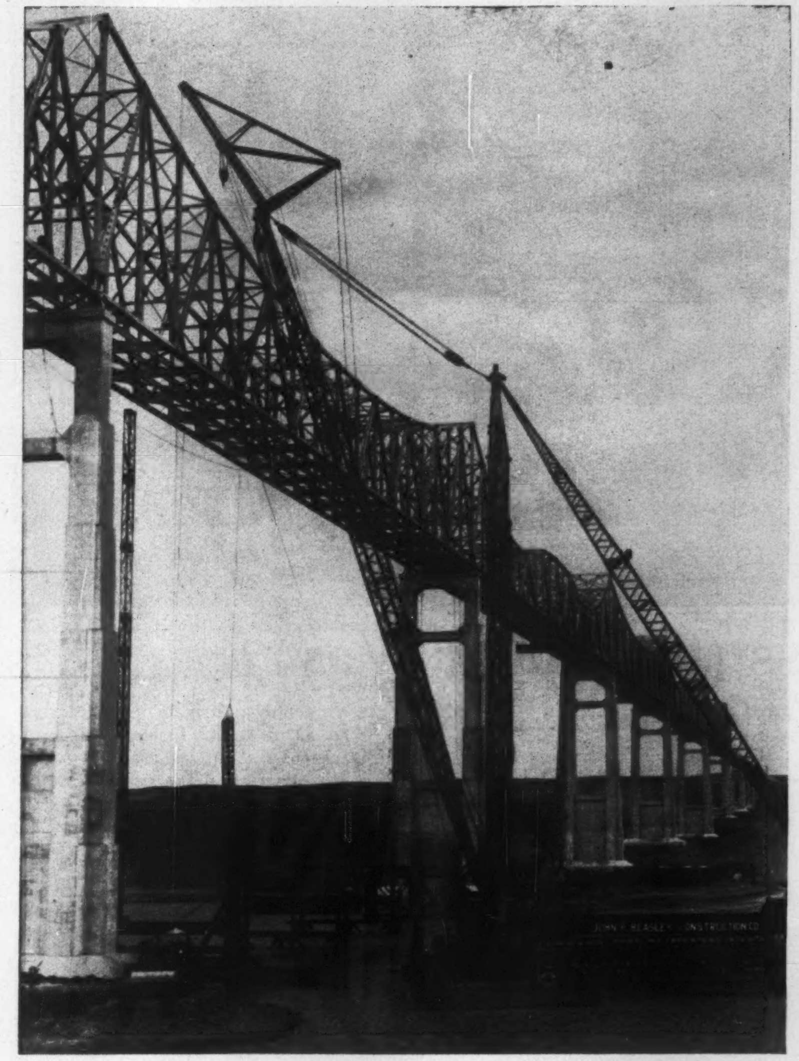
A 10-kiloton (10,000 tons TNT equivalent) device will be detonated in the tunnel upon its completion in early 1961, if authorized by the President.

On generation of power, the fundamental question is whether underground spaces will hold high heat for years after an explosion.

Though the U. S., U. K. and U. S. S.R. have agreed in principle at the Geneva negotiations to the use of nuclear explosions for peaceful purposes, AEC's announcement of site construction plans for the Carlsbad shot brought prompt objections from the Soviet side.

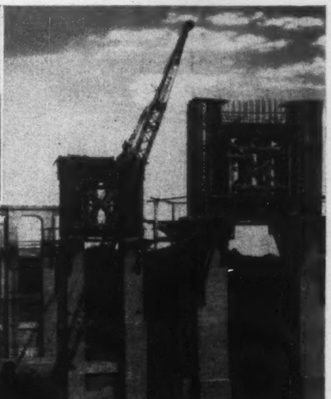
Semyon K. Tsarapkin, Soviet delegate at the Geneva test ban talks, said Russia was against nuclear explosions of any kind. While acknowledging the agreement, he noted that specific procedures on buried explosions had not yet been formulated.

Last fall during his U. S. visit, Soviet atomic chief Vasily S. Emelyanov rejected projects such as Plowshare on grounds they might be a means to get around a ban on weapons testing. "As long as there are nuclear armaments there should be no explosions in which weapon uses can be concealed," Emelyanov said at that time. "If there are real advantages," such as extraction of oil from shale, he said further, "I think the entire question should be put off until the weapons danger doesn't exist."



CONSTRUCTION OF CAUSEWAYS and fill-islands eliminated need for cofferdams for those piers which are in the stream. A stiffleg derrick, mounted on barge when over water and on track for land operations, lifted the heaviest and highest bridge sections, saving expensive falsework. 200′ boom carried 60′ jib.

JOB-BUILT RIG, operating on railroad tracks, solved the problem of long hauls (one bridge is 5,060′, the other 4,585′). The 95 lb. concrete for the 5¼″ thick decks was produced by using 1,210 lbs. of ⅜″ aggregate and only 405 lbs. of ¾″ aggregate in each cu. yd. of mix.



SAME SUBSTRUCTURE FORMS were used on both bridges. Cranes, as well as the derrick, placed concrete for the tall piers.

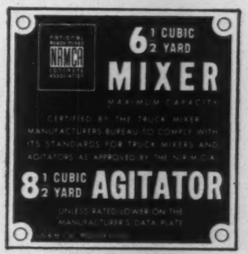
Design by Bridge Division, South Dakota Dept. of Highways. Substructure contractor, Massman Construction Co., Kansas City, Mo. Superstructure contractor, J. F. Beasley Construction Co., Chicago.
Photos by EN-R.

95 lb. concrete saves steel in bridge decks

Use of lightweight aggregate produced a 95-lb. per cu. ft. concrete for the roadways of two high-level bridges over the Missouri River in South Dakota. This saved approximately 3 million lbs. of floor dead load in one bridge and 3⅓ million lbs. in the other, permitting a substantial reduction in the weight and cost of structural steel.

This was one of the construction economies which, together, saved taxpayers $2 million on these look-alike bridges, the two longest spans between the Mississippi and the Pacific. Other factors in this big saving were the maximum reuse of concrete forms and duplicate fabrication and erection of superstructure trusses and girders for both bridges. Two sizes of concrete forms were used. The smaller forms were used 22 times, relined 5 times; the larger forms were used 13 times, relined 3 times.

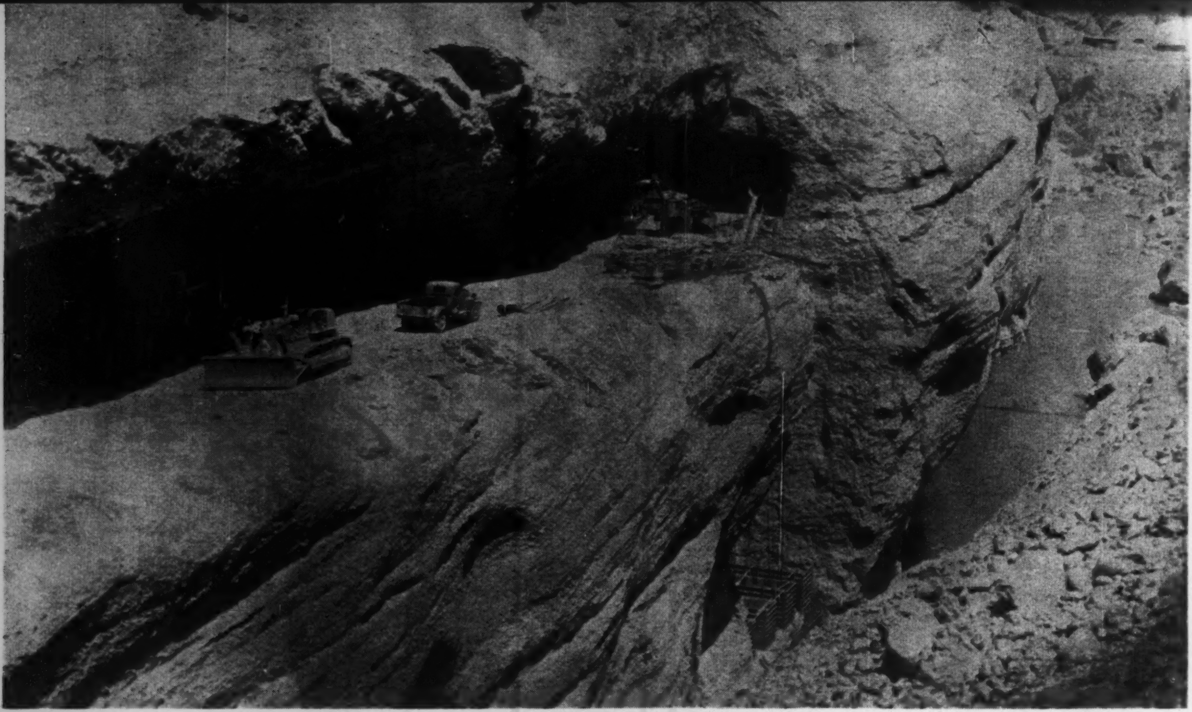
Trouble developed when concrete for the substructure of the first bridge was plant-mixed and hauled to the site in 2-yd. buckets. Hot weather and rough roads caused premature setting, even with retarder added. This was eliminated by pouring the superstructure of the first bridge, and all concrete in the second bridge, with truck mixers of certified design, capacity, mixing speed and water control accuracy.


NRMCA
6½ CUBIC YARD
MIXER
MAXIMUM CAPACITY
CERTIFIED BY THE TRUCK MIXER MANUFACTURERS BUREAU TO COMPLY WITH ITS STANDARDS FOR TRUCK MIXERS AND AGITATORS AS APPROVED BY THE N.R.M.C.A.
8½ CUBIC YARD
AGITATOR
UNLESS RATED LOWER ON THE MANUFACTURER'S DATA PLATE

You have a right to insist on this Rating Plate. It certifies compliance with the high industry standards which are maintained for your protection by the

TRUCK MIXER MANUFACTURERS BUREAU

Blaw-Knox Company, Construction Equipment
Pittsburgh, Pa.
Chain Belt Company
Milwaukee, Wis.
Challenge Manufacturing Company
Los Angeles, Calif.
Concrete Transport Mixer Company
St. Louis, Mo.
Construction Machinery Company
Waterloo, Iowa
Hercules Galion Products, Inc.
Galion, Ohio
The Jaeger Machine Company
Columbus, Ohio
The T. L. Smith Company
Milwaukee, Wis.
Westinghouse Transit Mixer Division
Indianapolis, Ind.
Whiteman Manufacturing Company
Pacoima, Calif.
Willard Concrete Machinery Co., Ltd.
Lynwood, Calif.
Worthington Corporation
Plainfield, N. J.



Damsite Access (the Hard Way)

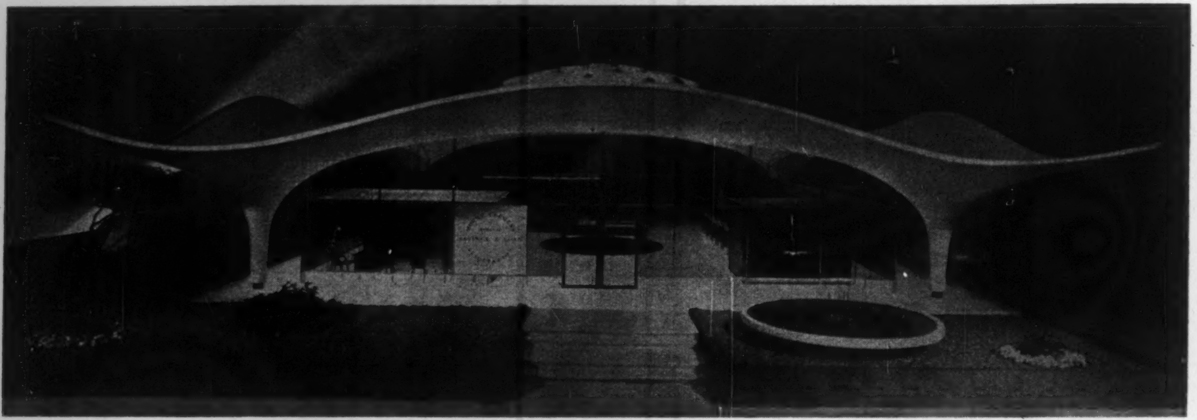
Even the open stretches of the access road to the site of Iran's Dez Dam are quasi-tunnels. The route snakes tortuously to the bottom of a 1,400-ft-deep gorge via numerous tunnels and a series of switchbacks, two of which are also underground.

The World Bank is lending Iran $42 million for the $59-million project, located on the Dez River in the Province of Khuzestan.

The dam will be a thin arch, 620 ft high. Designer is Electro-consult, Milan, under the guidance of Carlo Semeza. Initial power output is to be 65,000 kw with an ultimate capacity of 520,000 kw. During dry years the impounded waters behind the Dez Dam are expected to irrigate 425,000 acres.

Dez Dam is the first of a series of multipurpose dams under study for the five major rivers in the province (ENR Sept. 25, 1958, p. 56).

Morrison-Knudsen International, San Francisco, is building the access road under a $4-million contract awarded in 1958 (ENR May 1, 1958, p. 57).



For a Bank: Dramatic Thin-Shell Roof

A curving thin-shell roof and tapered pillars will form a dramatic covering for the Mount Clemens Savings & Loan Association building, Mt. Clemens, Mich.

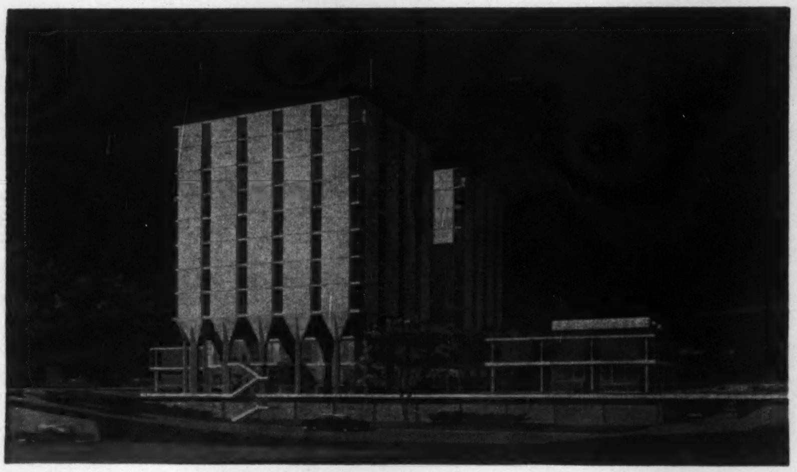
The concrete shell will be shaped with plywood forms mounted on a wood and steel scaffold frame. It will have a maximum thickness of 11 in. and a minimum of 5 in. Beneath the roof is the glass-enclosed office.

The building will be 23 ft 6 in. high. Column spacing is 67 ft in both directions. The building is a 60-ft square.

A pedestrian bridge across a sunken terrace will lead to a parking lot.

The structure, to be started this spring, will cost about $320,000.

Meathe, Kessler and Associates, Inc., Grosse Pointe Park, Mich., is the architect. Paul Weidlinger, New York City, is the structural engineer for the shell. R. H. McClurg Associates, Detroit, is the structural engineer for the foundation and floor slabs. Pulte Strang Co., Ferndale, Mich., is the general contractor.



Precast Bearing Walls for Center

Precast concrete bearing walls rising from flared exterior columns 2½ stories high will support the concrete floor framing of a $5.5-million medical center in New Haven, Conn. Preliminary design calls for flat-plate floor construction.

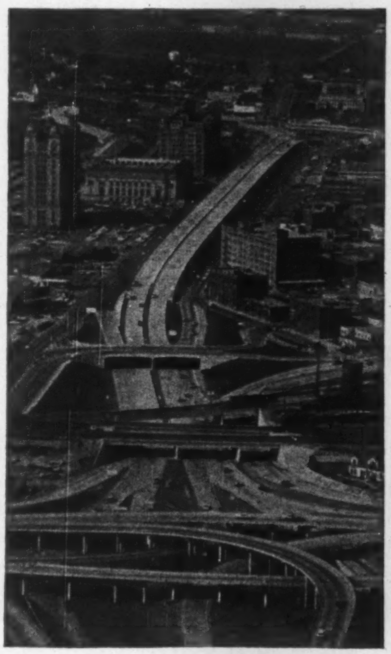
The 10-story main building is a twin tower. The two wings are joined by a narrow central section housing elevators and building utilities. Six channel-shaped concrete columns in this central section form vertical chases for pipes and ducts.

The center will contain physicians' offices, an out-patient operating unit, medical laboratories, surgical equipment store, medical insurance offices and various public facilities. There will also be an underground garage.

The New Haven Redevelopment Agency has approved the proposal for redeveloping the three-acre tract. It has received preliminary federal approval as a Title I project. Construction is scheduled to begin sometime this spring.

Caproni Associates of New Haven is architect; Paul Weidlinger of New York City is structural engineer. New Haven developer Edwin V. Larsen is the principal sponsor.

Cowtown Opens Expressway



The last section of Fort Worth's east-west freeway was officially opened to traffic last month.

Completion of this section of Interstate Highway 20 provides a continuous expressway from the western edge of Fort Worth, six miles west of the business district, into downtown Dallas by use of the Dallas-Fort Worth Turnpike.

The new elevated structure is 2,600 ft long. Total length, with approaches, is 1.1 miles. It carries four lanes of traffic, two in each direction, separated by an 8-ft-wide emergency parking shoulder on each side separated from the through lanes by a 4-in.-high mountable curb.

The section of the freeway between the "mixmaster" interchange and the east end of the elevated structure consists of four 12-ft-wide lanes in each direction. The section west of the elevated structure consists of three lanes in each direction.

The bridge was built under seven contracts at a total cost of $3,910,000. Right-of-way costs totaled $3.2 million.

SPEED CONSTRUCTION JOBS

SWENSON SPREADERS FOR Sealcoating

SAVE...

✓MEN
✓MONEY
✓MACHINES

Swenson Spreaders spread salt, calcium chloride, sand, gravel, cinders, or any combination of these materials in any quantity desired . . . in narrow strips or full traffic lanes. Clutch-controlled flow for steady or intermittent spreading. Operates at speeds up to 30 M.P.H. — forward or reverse. Swenson Spreaders are available in various sizes to fit any dump truck box. Fewer trucks, fewer men and less material are needed to spread a given area. This year trim your construction costs with Swenson Spreaders. Write us today!

SWENSON

SWENSON SPREADER
& MANUFACTURING CO.
LINDENWOOD, ILLINOIS

Brooklyn's Civic Center Garage is first underground municipal garage in New York area.

Rolling Forms Speed Construction

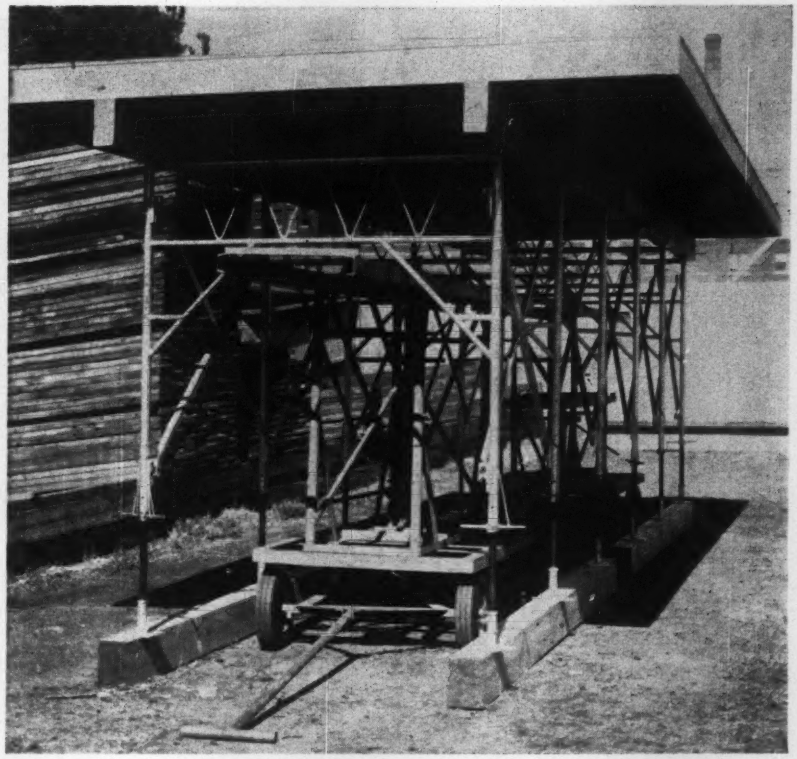
Sloping slabs were cast at rate of 5,000 sq ft daily.

An ingenious formwork system using rolling scaffolds speeded construction of Brooklyn's Civic Center Garage—a sloped-floor, three-level, underground structure featuring driver-parking for 700 automobiles, automatic traffic and revenue control, and electrically-controlled carbon monoxide exhaust.

The recently opened garage is the first in New York City's 10-year, $100-million off-street parking construction program and the first underground municipal garage in the metropolitan area. It is also part of the redevelopment of downtown Brooklyn. On adjacent plots, the new State Supreme Court Building and several modern municipal buildings border the public park above the garage.

The garage is basically a 290x308-ft area with 64-ft-wide sloped-floor sections along the north and south walls. Except for 48-ft-wide strips along the east and west walls, the central main floor area and its adjoining 64-ft floor sections slope in opposite directions at a 2.3% grade.

The concreting schedule called for daily casting of 5,000 sq ft of the garage's flat-slab floors and roof. Thirty-six formwork units, 10 x 14 ft in plan, were required for each day's pour. Six sets,



Dolly-mounted scaffolds stripped and relocated slab forms.

# of Automated Garage

or a total of 216 formwork units, enabled the contractor to maintain the schedule. Slab pours totaled 250 to 350 cu yd daily.

Each formwork unit consisted of ⅝-in. plywood on 2 x 6-in. joists spaced at 12 in. c-c and supported by 4 x 8-in. stringers at 5 ft c-c. Steel pipe scaffold frames carried these stringers. Bases of the screwjack pipe posts sat on continuous 6 x 8-in. sills at the floor below.

Laborers used rubber-tired dollies for stripping and transporting formwork units. Rolled in between the floor sills, a dolly picked up the scaffold load on a steel framework raised by a hydraulic jack mounted on the dolly. Workmen then raised the screw legs of the pipe scaffold off the floor sills. After removing the sills, they lowered the entire form assembly 6 in. from the concrete soffit by releasing the jacking pressure.

Crews then rolled the dolly to a new location and reversed the stripping process to reset the formwork. The hydraulic jack raised the formwork, workmen replaced the sills, tightened the screw legs of the pipe scaffold, released the jack and removed the dolly.

Slab-casting began in January, 1959, and continued through the winter until completion in May, 1959. During the cold-weather concreting, the contractor maintained salamander heat until the trowelled surface hardened. Laborers then placed 2-in.-thick insulation blankets on the surface, turning off the heat at the same time. Temperatures in the 3,500- psi mix remained above 50F until after stripping.

The engineers permitted stripping three days after casting, as long as the job-cured test cylinders had attained 50% of the 3,500-psi strength required at 28 days. Laborers reshored the slab with steel pipe screwjacks placed close to the quarter points of the slab spans immediately after stripping.

Flat slab floor framing is 14½ in. thick at the garage roof and 10 in. thick at the two sub levels. Roof design loads include 100 psf live load and 500 psf for earth fill of the park above. Floors are designed for 75-psf live load. Unlike the roof slab, floor slabs have no drop panels. The basement floor is 6-in. slab-on-ground.

Columns are typically 26-in.-dia sections, reinforced with spirals. All have capitals, 5 ft 6 in. in diameter.

Exterior walls are 12-in.-thick reinforced concrete, spanning vertically between slabs to retain lateral earth pressure.

Foundations are conventional spread footings bearing on sand and gravel designed for four tons psf bearing pressure. The contractor used opencut on three sides of the excavation. To avoid undermining subsurface utilities just outside the fourth side, he drove vertical steel H-section soldier beams, bracing them with two rows of walers and two levels of steel rakers butted against interior column footings. Timber lagging retained earth between the soldier beams.

The automatic traffic and revenue control system performs these operations:

- Issues tickets to entering drivers.
- Directs drivers to parking spaces.
- Processes tickets at exit
- Maintains continuous count and records occupancy and revenue data.

Major components of the system include a Remote Recorder, differential counters, ticket issuing machines and parking-toll computers, and tamper-proof treadles that distinguish between forward and reverse car motion.

The Remote Recorder is the central record-keeping device of the system. It registers entrance and exit car counts in all three zones of the garage, keeping a tally of over-all and zone occupancy. It also computes and totals parking revenue.

The extensive automation enables 10 employees on three eight-hour shifts to maintain round-the-clock operations.

Directional signs actuated by the differential counters limit the driver's search to the zone in which a vacancy occurs. The garage's three parking zones are divided by the three sub levels.

The buildings above grade at the four corners of the site house exhaust plenums and fans and exit stairwells. They have reinforced concrete roof framing and walls, faced in limestone. The walls of the control center and the exposed portions of the garage are faced in limestone and granite.

The carbon monoxide exhaust system, like the traffic and revenue control system, is electrically-controlled. There are ten carbon monoxide sampling points. Two analyzer systems, each serving five sampling stations at the north and south walls, control dampers in the masonry ducts around the periphery of the building. The analyzer servomechanisms are preset to limit the carbon monoxide concentration to 175 ppm and adjust dampers to keep it below this level.

The ventilation system is designed for a minimum of four air changes and a maximum of eight air changes per hour. Centrifugal fans, powered by 40 hp electrical motors draw contaminated air

DON'T LET YOUR TRIP ABROAD BE SPOILED!

Should an accident happen when you're driving abroad in your own or a rented car, your domestic insurance, most likely, will not cover you. Strange laws, customs and language also may add to your problems.

Your one safe answer is the kind of insurance AFIA provides—insurance designed in the American way but patterned to comply with the compulsory requirements of the countries you travel.

So if you're going overseas on business or pleasure . . . play it safe. Have your agent or broker discuss your plans with AFIA to be sure you have adequate and proper insurance—personal property, liability, trip accident and automobile—to give you sound protection abroad.

Remember through AFIA you get American protection, skillfully prepared and payable in American dollars—with on-the-scene service in 74 countries. In short, AFIA means OVERSEAS PROTECTION UNSURPASSED.

AFIA

AMERICAN FOREIGN INSURANCE ASSOCIATION
161 William Street • New York 38, New York

CHICAGO OFFICE . . Insurance Exchange Building, 175 West Jackson Blvd., Chicago 4, Illinois
DALLAS OFFICE . . . . 400 Vaughn Building, 1712 Commerce Street, Dallas 1, Texas
HOUSTON OFFICE . . . . The Century Building, 2120 Travis Street, Houston 2, Texas
LOS ANGELES OFFICE . . . . 3277 Wilshire Boulevard, Los Angeles 5, California
SAN FRANCISCO OFFICE . . Russ Building, 235 Montgomery Street, San Francisco 4, California
WASHINGTON OFFICE . . . . Woodward Building, 733 15th Street N. W., Washington 5, D. C.

An association of leading American capital stock fire, marine, casualty and surety insurance companies providing insurance protection in foreign lands

WORKMEN INSTALL timber lagging to retain earth along one side of excavation.

up through floor gratings and exhaust it at a maximum rate of 60,000 cfm at each of the four surface buildings. Baffled sound attenuators reduce noise at the exhaust louvers.

The masonry-enclosed exhaust ducts measure 28 in. from inside of masonry to inside face of the exterior walls. They extend the full ceiling height of 8 ft.

Two intake plenums at the west side of the garage, covered by sidewalk gratings 19 x 30 ft in plan, admit outside air at the rear.

Intake openings at each level are staggered so that pans catch dirt and rain falling through the grating. At the garage front, fresh air enters through roll-up steel grille doors.

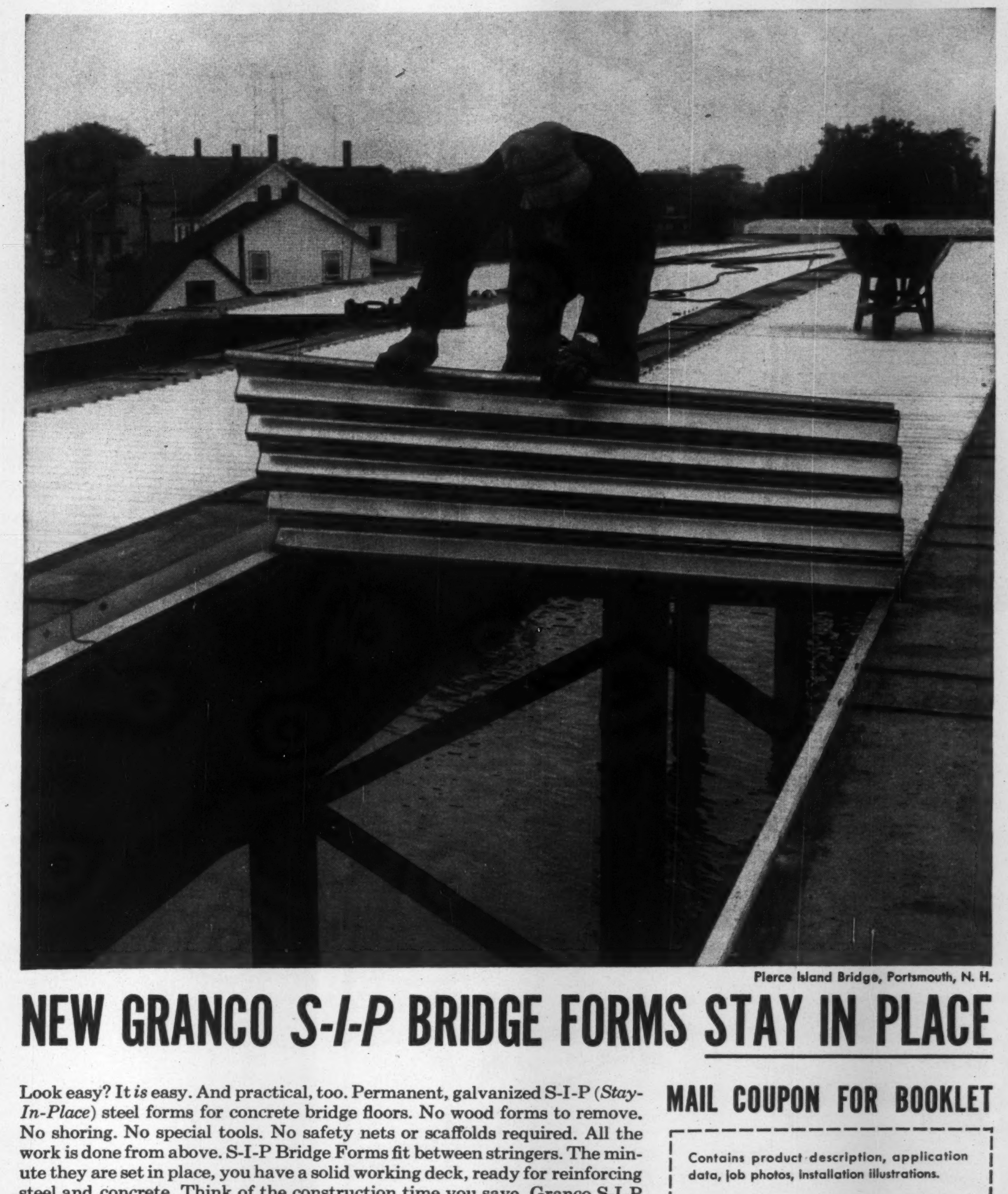
The New York City Traffic Department, under Commissioner T. T. Wiley, will operate the self-liquidating facility with city personnel. The Department may later lease it on a management contract to a private operator.

Total construction cost, including general contract, plumbing, heating and ventilating, and electrical work, is $2.6 million. Cost per car of $3,700 compares favorably with similar underground garages.

Architect-engineer was James R. Fraser, consulting engineer of New York City. Milton Dubin was Fraser's project engineer. Mr. Dubin is now a partner in the New York City A-E firm of Rouse, Dubin and Ventura.

Walter Eller was field superintendent for HRH Construction Corp. of New York City, the general contractor. The Department of Public Works under Commissioner Frederick H. Zurmuhlen, supervised the work for New York City.

Ramp Consulting Services, Inc., New York City, made a feasibility study of the project for the Department of Traffic.



Pierce Island Bridge, Portsmouth, N. H.

NEW GRANCO *S-I-P* BRIDGE FORMS STAY IN PLACE

Look easy? It *is* easy. And practical, too. Permanent, galvanized S-I-P (*Stay-In-Place*) steel forms for concrete bridge floors. No wood forms to remove. No shoring. No special tools. No safety nets or scaffolds required. All the work is done from above. S-I-P Bridge Forms fit between stringers. The minute they are set in place, you have a solid working deck, ready for reinforcing steel and concrete. Think of the construction time you save. Granco S-I-P Bridge Forms are available now. Want more information? Just mail coupon.

GRANCO STEEL PRODUCTS CO.
6506 N. Broadway, St. Louis 15, Mo.
A Subsidiary of GRANITE CITY STEEL CO.
Distributors in Principal Cities

GRANCO®

MAIL COUPON FOR BOOKLET

Contains product description, application data, job photos, installation illustrations.

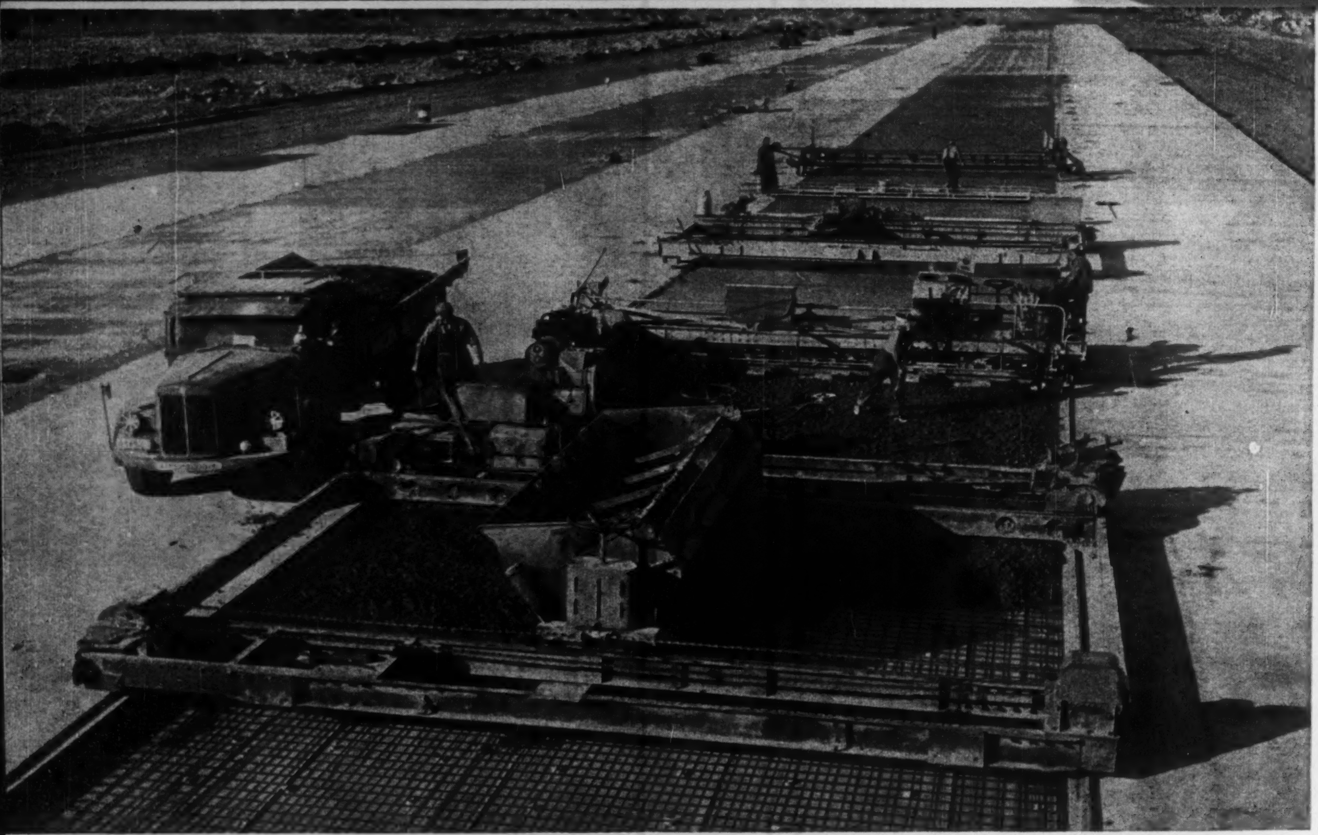
Name____________________

Firm____________________

Address____________________

City____________ State____________

Mail to Granco address shown at left.
Attention Dept. E-604



Paving train installs section of 10,827-ft runway at Arlanda, 25 miles north of Stockholm.

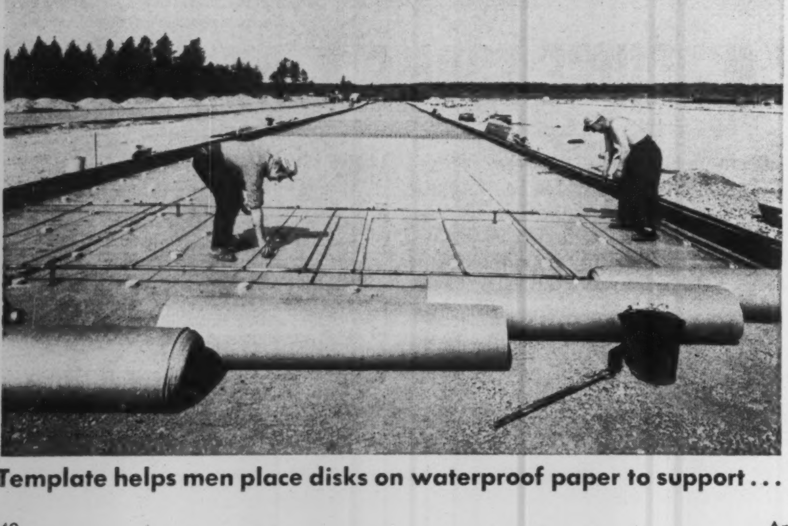
Swedes Drill and Blast a Jet

Sweden's Arlanda International may be just another airport to the crew of the first jetliner scheduled to land on it this month, but to the men who designed and are building it, Europe's newest airfield is far more. It's a story of careful, long range planning, large sums of money, big quantities and unusual combinations of construction problems.

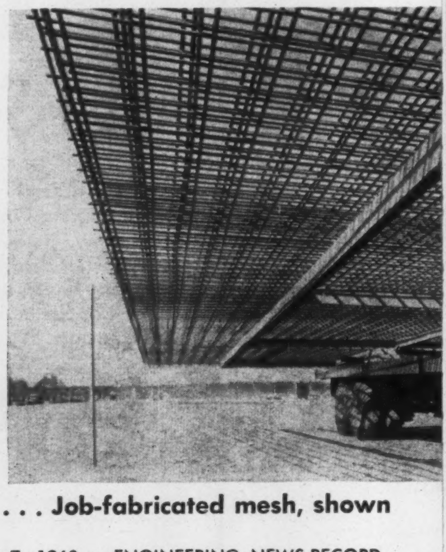
Arlanda was carved and blasted from 6,250 acres of virgin countryside 25 miles north of Stockholm after several other sites were considered and rejected. In preparation for runway construction, the contractors moved more than 3¼ million cu yd of earth and gravel, blasted more than half a million cu yd of rock, and—incongruously enough—installed more than 1.5 million ft of sand drains.

Considerations for public safety and comfort played a large role in determining the airport's distance from Stockholm. As an extension of this policy, new zoning laws make it impossible to build a house within 3.5 miles of any of the airport boundaries.

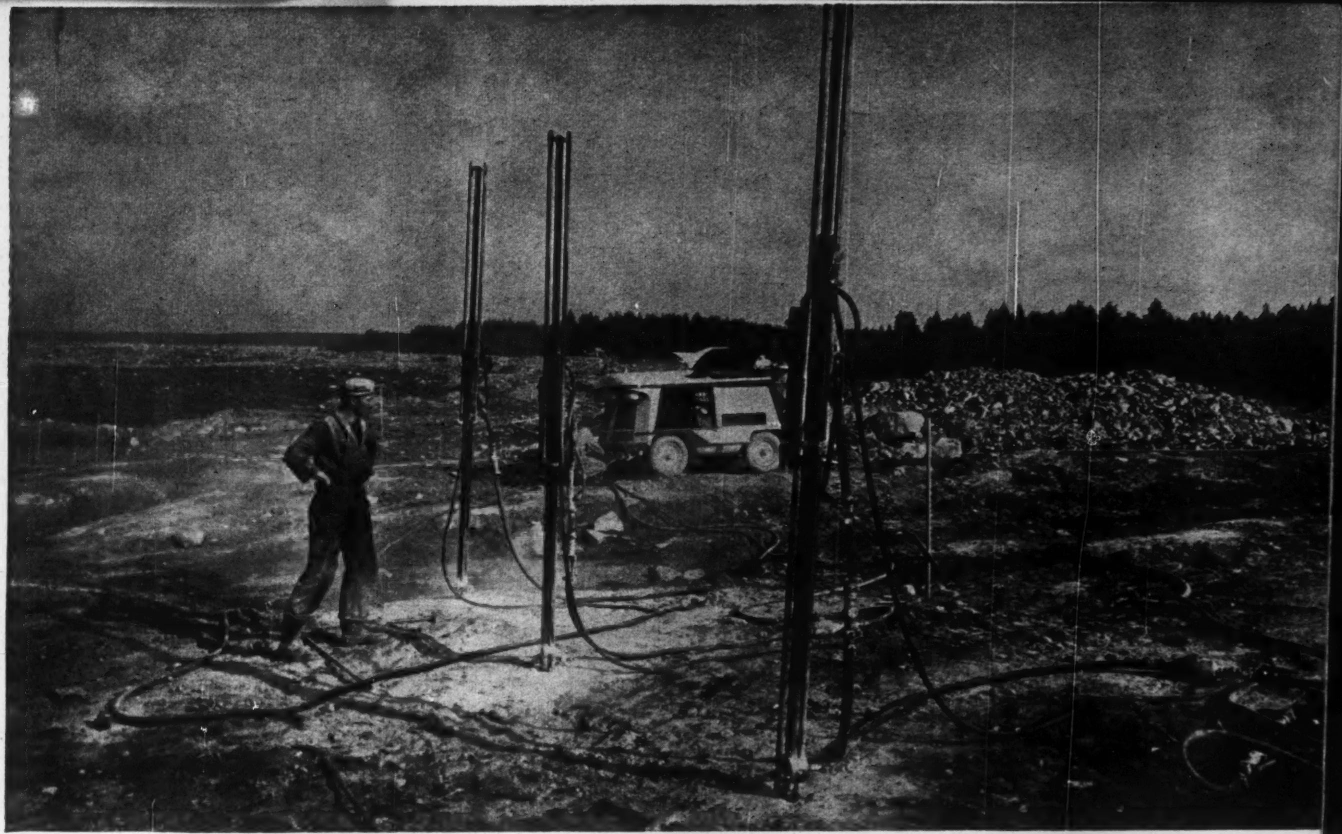
The airport is designed for jets. Its main runway is 10,827 ft long, 230 ft wide, and comprises a central 150-



Template helps men place disks on waterproof paper to support . . .



. . . Job-fabricated mesh, shown



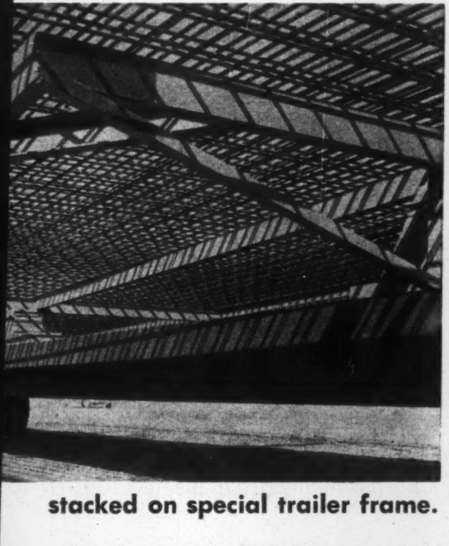
Drilling and blasting were big items; contractor removed 590,000 cu yd of rock.

Airport Out of Rocky Terrain

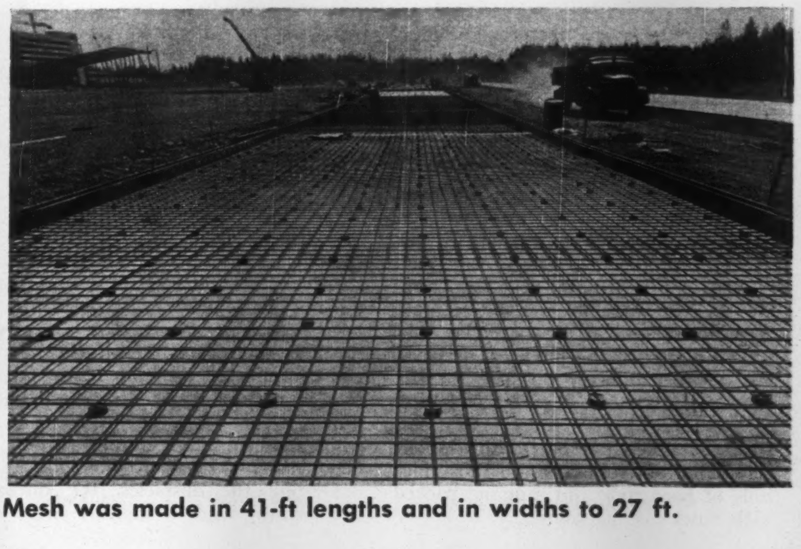
ft-wide section of 9-in. reinforced concrete and two 44-ft-wide flanking strips of asphalt. All taxiways are 132 ft wide. They consist of an 82-ft central section of concrete and two 25-ft-wide flanking strips of asphalt. Hangar aprons, 830 x 590 ft and 935 x 590, are of concrete.

All concrete pavement can sustain aircraft of up to 220 tons if they have conventional four-wheel trucks in the landing gear. Should jetliners go to eight-wheel trucks, as has been suggested by some aircraft designers, then planes of up to 400 tons could be accommodated. (For comparison, a fully loaded DC-8, heaviest of today's jets, weighs just over 140 tons.)

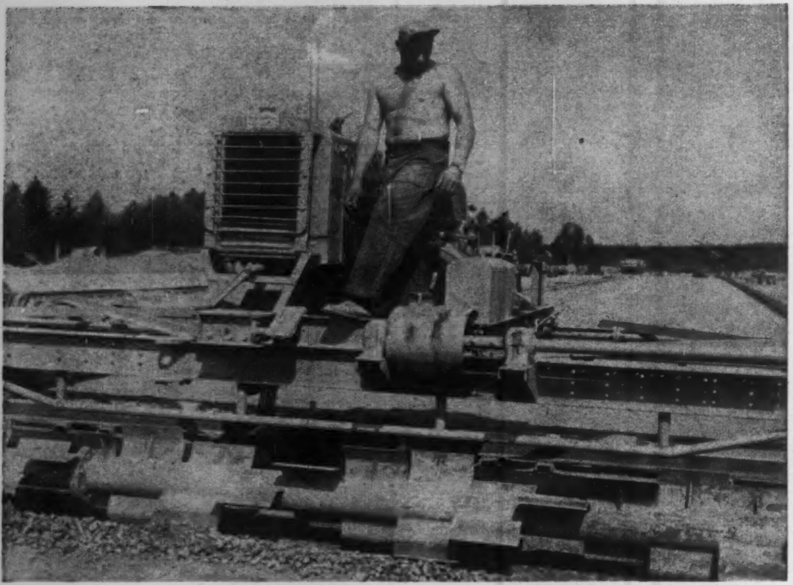
Permanent terminal buildings and hangars will not be completed until 1963. By then, $45 million will have been invested in the airport and another $14 million spent for a four-lane road to Stockholm. However, the Swedish Board of Civil Aviation, owner of Arlanda, has completed a workshop, a central heating plant, an 81-ft-high control tower of cast-in-place concrete and a 176,000-gal water tower. Also completed are the surveillance and precision radar systems, the instrument land-



stacked on special trailer frame.



Mesh was made in 41-ft lengths and in widths to 27 ft.



BASE FINISHER rides form rails. Paddle wheels plane the surface, horizontal beam at rear compacts it. Similar rig was used for spreading concrete.

ing system and runway lighting devices.

The surveillance radar will track any plane up to 40,000 ft and within a radius of 120 miles. The lighting system has a transformer rating of 8,000 kw. Double power lines, totaling about 120 miles of cable, protect against lighting failures. Centerline and sideline lighting wells are at 98-ft intervals.

The Scandanavian Airways System has already spent $5 million to complete a section of its $8-million hangar. This section consists of a central multistory structure with cast-in-place walls and lightweight precast concrete floors and roof. On either side of the structure is a cantilever roof supported by 2.75-in.-dia cables. Sliding doors, each 78 ft wide, 52 ft high and weighing 25 tons, enclose the work area of the hangar.

Among the safety features included are two foam sprinkler systems—one in the ceiling, the other on the floor. The present hangar will house four DC-8's. By 1963 this will be expanded to twice that size.

Construction in northern latitudes is expected to meet with certain natural obstacles, particularly in winter. Arlanda is no exception. The weather is not severe, but snow is often deep; the ground can be frozen from late Septem to May, and in mid-winter there are only six hours of light per day.

The nature of the terrain at Arlanda was another difficult obstacle for the runway contractor. The area is typical of the Swedish Lowlands. It contains small but deep pockets of soft, sticky clay, large outcroppings and subsurface hills of hard rock and moraine packed with truck-size boulders.

Tractors and scrapers were used to a small extent, but most of the excavation had to be done with shovels, draglines, clamshells and backhoes. The equipment inventory tells the story: at the peak of operation the contractor had on the job 22 excavators with 2½- and 3-cu yd buckets; 18 tractors with and without scrapers; 21-off-highway trucks of 22-ton capacity; nine other off-the-road trucks; and 50 highway trucks of 8-cu-yd capacities.

The rock outcroppings were so contoured that most of the drilling had to be done manually with jackhammers and airleg machines. Where holes could be drilled 15 ft or deeper, the contractor used machines of the wagon drill type—but they were mounted on fixed legs (see picture). About 65 such units were required. One man handled two drills and with them averaged better than 600 ft of hole per shift. Record for the job was 683 ft for one shift. In the relatively few cases where large hole drilling was possible, tractor-mounted drills with 3-in.-dia bits cut the rock to depths of 40 ft.

In all, 590,000 cu yd of rock was blasted and removed. Some of this rock was used as fill in areas where nearly 200,000 cu yd of clay was dug out. The remainder was dumped in low land at the end of the runway.

In several areas outside the runway the clay was not removed. Instead, it was consolidated by sand drains. More than 46,000 drains were installed. They were spaced 45 in. on centers, and while most of them were about 26 ft deep, many went to 40 ft.

Despite the obstacles, the runway and taxiway work is months ahead of schedule. And while there is still a considerable amount of off-runway grading to be done, the paving is nearly completed.

Handling the $7-million grading and paving contract is Skanska Cementgjuteriet (Scanian Cement Foundry) of Stockholm.

Here's how they did the paving:

About two million cu yd of gravel went into subbase material and asphalt and concrete aggregate. This was moved in 8-cu yd trucks from a pit at one end of the runway to a processing plant that included both jaw and gyratory crushers. Two fully automatic concrete batching plants and one asphalt plant mixed the materials. A laboratory was set up next to the batch plants to maintain continuous quality control.

The subgrade was planed and tamped by a single machine that rides on the form rails. At the front, this machine has a revolving paddle wheel that levels the ground; at the rear it has a horizontal beam tamper.

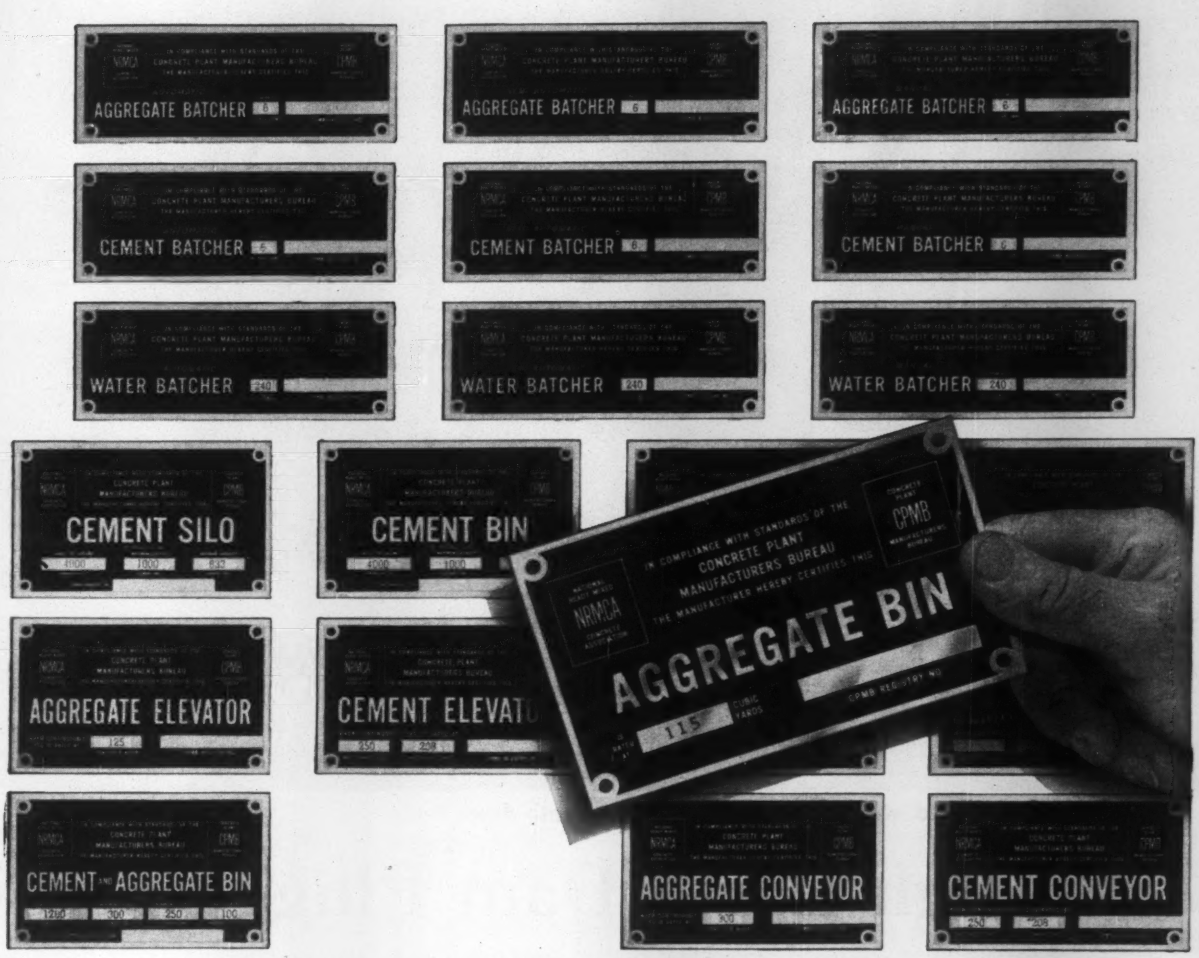
Because the specifications called for the reinforcing to be placed almost at the bottom of the slabs, it was possible to cast the concrete in a single pass. To support the mesh, circular concrete blocks, 1 3/16 in. high, were set with a template on the layer of waterproof paper that covers the sub-base.

The mesh was job fabricated by a process that involved factory-like precision methods. The rods, cut to the proper length, were set in a jig. A wheel mounted shed, with six welding heads suspended from its roof, was then rolled back and forth over the jig to complete the mesh, which was turned out in 41-ft lengths of 16-, 23-, and 27-ft widths. These mats were carried to the forms on a special trailer (see picture) and set in place by a crane.

Concrete was delivered to the paving train in 3.8-cu yd side dump trucks. The spreader carried a 4-cu yd trough that moved transversally across the paving area. The second unit in the train was a triple threat rig mounting a paddle-wheel screed, a horizontal vibrating unit, and a transverse finisher. A longitudinal finisher followed. Bringing up the rear was a machine with a brush for transverse roughing of the pavement and an automatic sealer sprayer.

(Normally the sprayer would have been used immediately after the brush. In last summer's extremely dry weather, however, cracks developed in the fresh concrete, particularly when it was cast against cured concrete. To prevent this, the concrete was given a fine water spray for several hours before the sealer was applied.)

Contraction and expansion joints, of about ⅜ in. and ¾ in. respectively, were later sawed along joints made by fiberboards inserted in the fresh concrete from the back of the finishing machine.


AGGREGATE BATCHER
CEMENT BATCHER
WATER BATCHER
CEMENT SILO
CEMENT BIN
AGGREGATE ELEVATOR
CEMENT ELEVATOR
CEMENT AND AGGREGATE BIN
AGGREGATE CONVEYOR
CEMENT CONVEYOR
IN COMPLIANCE WITH STANDARDS OF THE CONCRETE PLANT MANUFACTURERS BUREAU THE MANUFACTURER HEREBY CERTIFIES THIS
NRMCA
CPMB
AGGREGATE BIN
115 CUBIC YARDS
CPMB REGISTRY NO

ANNOUNCEMENT

of Major Importance to Concrete Producers

Standards for concrete plant components have been established by the Concrete Plant Manufacturers Bureau and approved by the Board of Directors of the National Ready Mixed Concrete Association. New equipment complying with these standards is now certified by Rating Plate.

To meet the recognized need for standards in concrete plant components, leading equipment builders established the Concrete Plant Manufacturers Bureau as an affiliate of N.R.M.C.A. in 1958.

The standards formulated by this Bureau and now adopted by all member companies are the product of this cooperative effort.

They embody the combined experience of engineers and plant builders who have produced most of the bins, batchers, elevators and conveyors in use today for handling aggregates and cement.

BENEFITS CONSTRUCTION INDUSTRY

For these plant components, and their combinations, the construction industry will now enjoy the great advantages of standard nomenclature, standard capacities and a standard industry-wide basis for determining all capacity ratings. These standards became effective March 1, 1960, with the prior approval of the Board of Directors of the N.R.M.C.A.

All equipment manufactured in compliance with the Bureau standards, and shipped by member manufacturers since that date, bears a certifying Rating Plate. Rating plates will not be applicable to equipment already in the field or shipped before the standards were adopted.

Copies of the "Concrete Plant Standards" are now available on request. Those interested in quality standards, particularly all users of aggregate and cement handling equipment, are invited to address their requests to the Concrete Plant Manufacturers Bureau, 1411 K Street N. W., Washington 5, D. C.

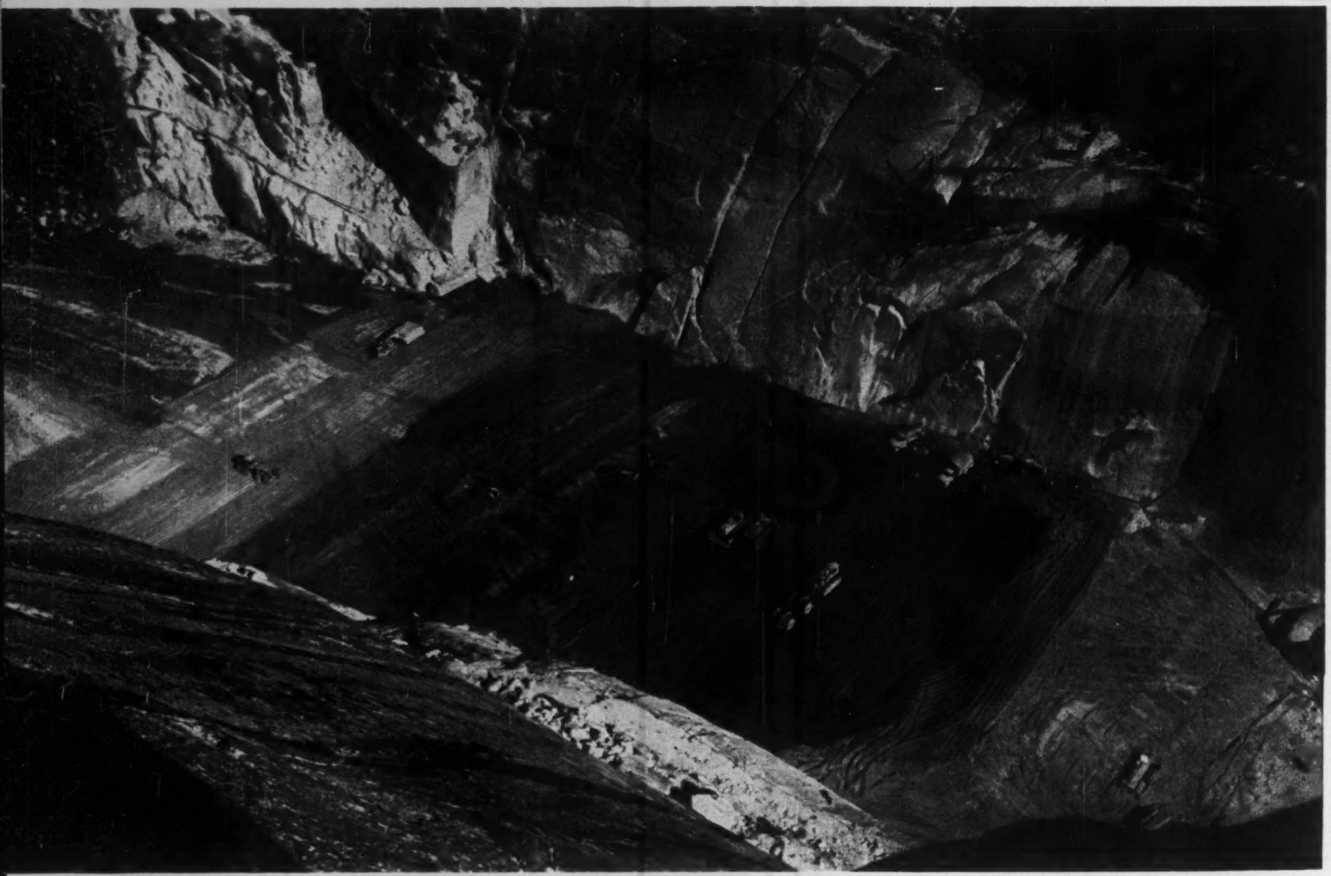
CONCRETE PLANT MANUFACTURERS BUREAU (CPMB)
An affiliate of the National Ready Mixed Concrete Association

BLAW-KNOX COMPANY
Pittsburgh, Pa.
BUTLER BIN COMPANY
Waukesha, Wis.

CHAIN BELT COMPANY
Milwaukee, Wis.
ERIE STRAYER COMPANY
Erie, Pa.

THE HELTZEL STEEL FORM AND IRON COMPANY
Warren, Ohio

THE C. S. JOHNSON COMPANY
Champaign, Ill.
NOBLE COMPANY
Oakland, Calif.



Steep rock walls could make a good site for a concrete dam, but . . .

High Earth Dam Plugs Narrow

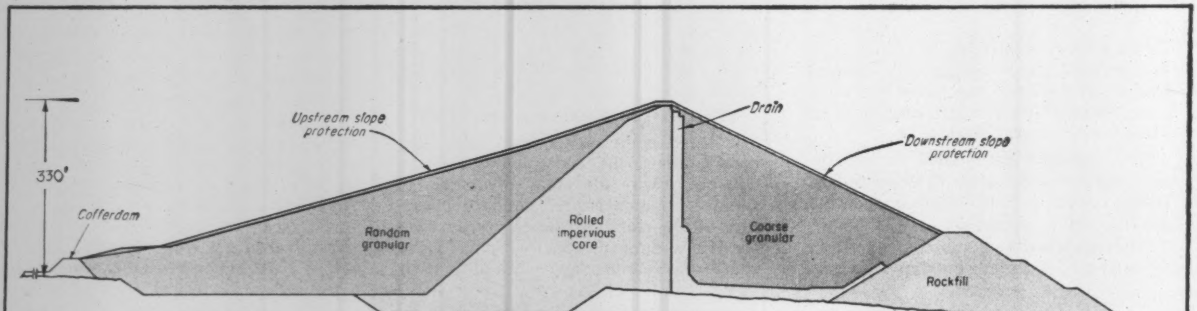
The payoff has started at Southern California Edison's Mammoth Pool hydroelectric project in the High Sierra. The generating units are now feeding power into the utility's network.

The startup marks virtual completion of a project that is notable on several counts.

The most remarkable feature of the dam is its type, considering the site. The structure is an earthfill dam in a steep-walled narrow canyon, where a concrete dam might be expected. Allied points of interest are the close control of earth placement and the high degree of instrumentation of the fill. Tunneling was also outstanding on the job, from the standpoint of both pace and methods.

The main permanent parts of the project are Mammoth Pool Dam and Reservoir, Mammoth Pool Powerhouse and an eight-mile power tunnel. A major temporary work was a 2,150-ft diversion tunnel.

The dam is 830 ft long at the crest and rises 330 ft from the stream bed. It is located in a canyon with rock walls sloping up as steeply as 75 degrees from horizontal. High ridges flanking the canyon on both sides appear ideal for operation of a high line for concrete placement, and the site looks


Upstream slope protection
Drain
Downstream slope protection
330'
Cofferdam
Random granular
Rolled impervious core
Coarse granular
Rockfill
Concrete
± 2000'

Simplified cross section shows salient features of the embankment.

. . . With fill placement under tight control . . .

Canyon for Power

made to order for a concrete dam rather than a fill.

But analysis proved otherwise. The designers investigated multiple arch, thin arch, concrete gravity, rockfill with sloping core, rockfill with concrete face, and earthfill types. Earthfill won the nod by a margin of at least $1 million.

The steep canyon walls dictated special care in earth placement. For this reason all overhanging rock was removed by blasting and scaling and the fill placed adjacent to the abutments was kept plastic during the construction period with additional water to accommodate settlements without shearing.

The dam contains about 5 million cu yd of fill, classified for placement purposes in several categories. Tightest control was reserved for the impervious core, which comprises 1.6 million cu yd. Specifications required at least 20% of it to pass the No. 100 sieve. Moisture content of the zone was allowed to deviate no more than 1% from the optimum value as determined in the laboratory. This required constant checking, not only to verify compliance but also to remeasure the optimum moisture content, which ranged over a 10% to 15% spread because of soil variations within the impervious zone material.

Strata underlying the impervious core were filled in with a considerable quantity of "dental" concrete where irregularities would prevent earth compaction by rolling. From the bottom of the concrete-filled cutoff trench under the core, the dam rises about 470 ft.

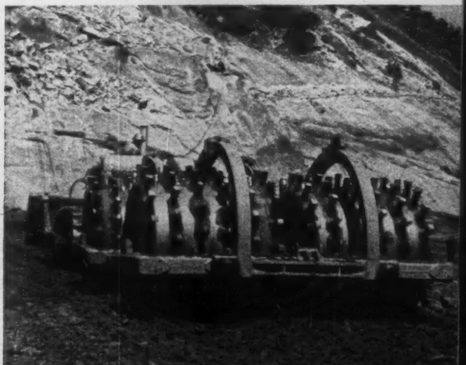
About 2.5 million cu yd of granular material in the main shell of the dam had to meet requirements almost equal to those for the core zone. In fact, the upstream shell and the lower half of the downstream shell are made up of materials slightly coarser than the core material.

Well over 80% of the total fill required for the dam came from a borrow area two miles away. The haul was downhill on a 6% grade. The remainder came from several sources. Riprap for upstream and downstream slope protection came from the spillway excavation. Coarse material for a drain was processed from tunnel muck. Filter material was dredged by means of a vacuum dredge from the river bed downstream from the dam.

The top 10 ft of the borrow pit was prime material, suitable for the impervious core—mainly disintegrated granite. Most of it passed the No. 100 sieve. The next zone down was used as random fill.

Borrow was developed by scrapers with pushers. The material was watered at both the borrow pit and dam site to attain the desired moisture content. During summer operations, the contractor used about 2 million gal of

Multiple streams water the fill material at the borrow pit.



Rollers made about 10 passes.

FOR LONG OR SHORT SPANS—

Steel is best for bridges...

AND THE COMBINATION OF USS HIGH-STRENGTH STEEL WITH CARBON STRUCTURAL STEEL CUTS WEIGHT, REDUCES COSTS AND INCREASES CLEARANCES

Here are three cases where the use of USS Man-Ten Brand of High-Strength Steel in short-span bridges resulted in weight reductions up to 29% and substantial savings in cost. The depth of the stringers was reduced from 36 inches to 33 inches in some instances, by designing to permissable allowable stresses of 24,000 psi for USS Man-Ten Steel compared to 18,000 psi for A-7 steel.

All three jobs are parts of the Penn-Lincoln Parkway East in downtown Pittsburgh. A total of 4,250 tons of USS High-Strength Steel combined with 695 tons of A-7 steel, using both strength levels as good design dictated, were used to construct these modern over-passes and elevated structures. The designer and engineers were Richardson, Gordon & Associates, Pittsburgh, and the General Contractor, Fabricator and Erector was Fort Pitt Bridge Works, Pittsburgh, Pa. Concrete Contractor: John F. Casey Company, Pittsburgh, Pa.

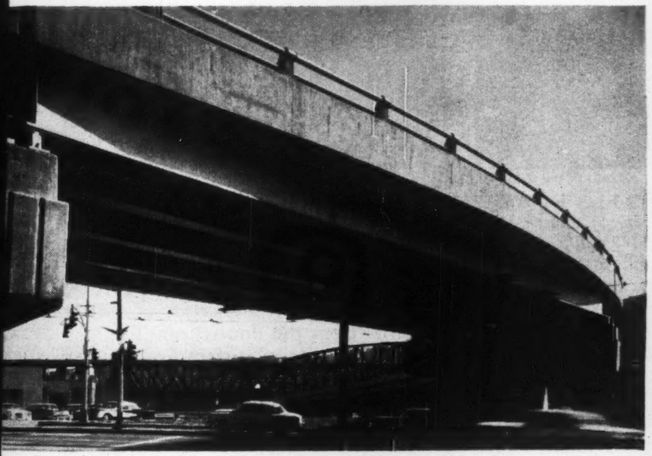
United States Steel makes steel of high-strength levels for a wide variety of applications: USS Man-Ten, USS Cor-Ten, USS Tri-Ten Brands (50,000 psi minimum yield point), USS "T-1" Constructional Alloy Steel (100,000 psi minimum yield strength), in addition to a complete range of carbon and stainless steels. For more information, write United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS, MAN-TEN, COR-TEN, TRI-TEN and "T-1" are registered trademarks

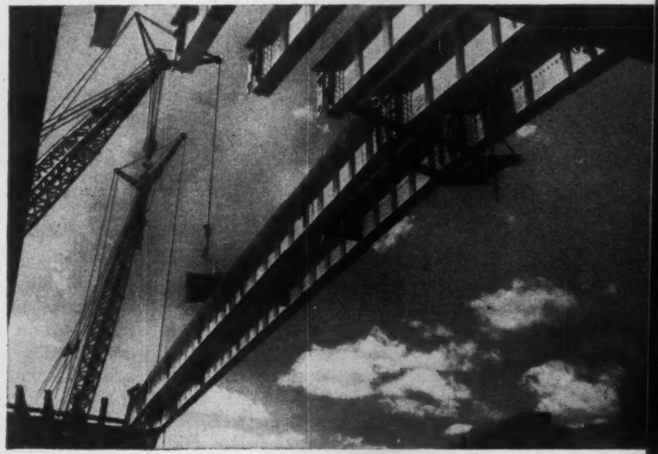
United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

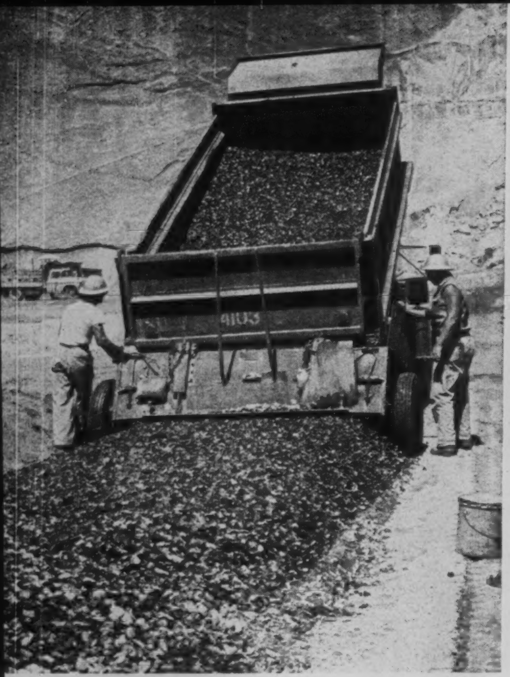
◀ **COST REDUCTION.** A typical 54-foot USS MAN-TEN Steel wide flange structural (33 inches deep) used as a stringer in this section costs $41.85 less than one made of A-7 steel (36 inches deep). With 28 spans and 140 such stringers between Stanwix and Grant Streets, in Pittsburgh's Penn-Lincoln Parkway, the total saving in favor of USS MAN-TEN High-Strength Steel is $5,859. Weight savings were 23½% in the stringers, and their depth was reduced three inches compared to the depth of the member that would have been required had A-7 steel been specified. Deflection requirements of the end cross girders in this, as well as other portions of this part of the Parkway, were such that A-7 steel was the more economical grade for these parts. Material costs (f.o.b. mill) and weight savings calculated by United States Steel.



29% WEIGHT SAVING. This curved ramp off Grant Street has 7 spans of 65 feet and 1 span of 77 feet using 850 tons of USS MAN-TEN High-Strength Steel and 100 tons of A-7 steel. Simple rolled beams of high-strength steel were possible instead of built-up plate girders of A-7 steel. This is responsible for a large reduction in weight and cost. Again, due to deflection requirements, cross members were A-7 steel.



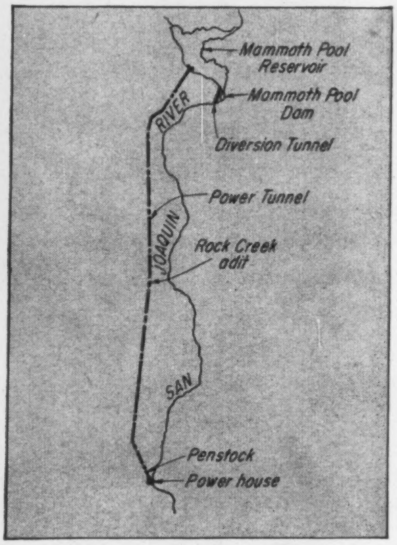
GREATER STRENGTH—MORE CLEARANCE. Westbound Parkway ramp near 10th Street, crossing B&O freight yards. A good application where MAN-TEN High-Strength Steel reduced the depth of the girders, providing greater clearance. This section has 12 spans: 9 simple span plate girders 130' x 66" deep and 3 anchor plate girder spans with cantilever arms 180' to 199' end to end x 66" deep. 3,100 tons of MAN-TEN Steel were used in the girders and 560 tons of A-7 steel were used for expansion dams, diaphragms and shear locks. Weight savings estimated —about 26%.



Drain layer is dumped neatly.

Scraper and pusher develop material at borrow pit.

Vacuum dredge collects filter sand from stream bed.



Project is on the San Joaquin.

water a day and placed about 21,000 cu yd of compacted fill a day. Compaction factor, embankment: borrow pit, was about 70%.

Core material was compacted with double-tandem sheepsfoot rollers and shell materials were compacted with 50-ton rubber-tired rollers. It took about 10 passes on the average to attain the required density. Filter and drain materials were compacted with vibratory rollers.

There was no convenient supply of sufficiently permeable fill for the embankment on the downstream side of the impervious core, so a drain of coarse material was installed to intercept and carry off seepage and prevent its entry into the relatively impervious material of the downstream shell.

The drain comprises an 8-ft-thick vertical layer of ¼-1½-in. material extending from the top to the bottom of the embankment between the impervious core and the downstream fill, and a 10-ft-thick horizontal layer of ⅛-4 in. material underlying the downstream fill from the bottom of the vertical drain to the dam's rockfill toe. Water migrating through the impervious core drains downward when it reaches the vertical layer and then escapes to the toe of the dam through the horizontal layer.

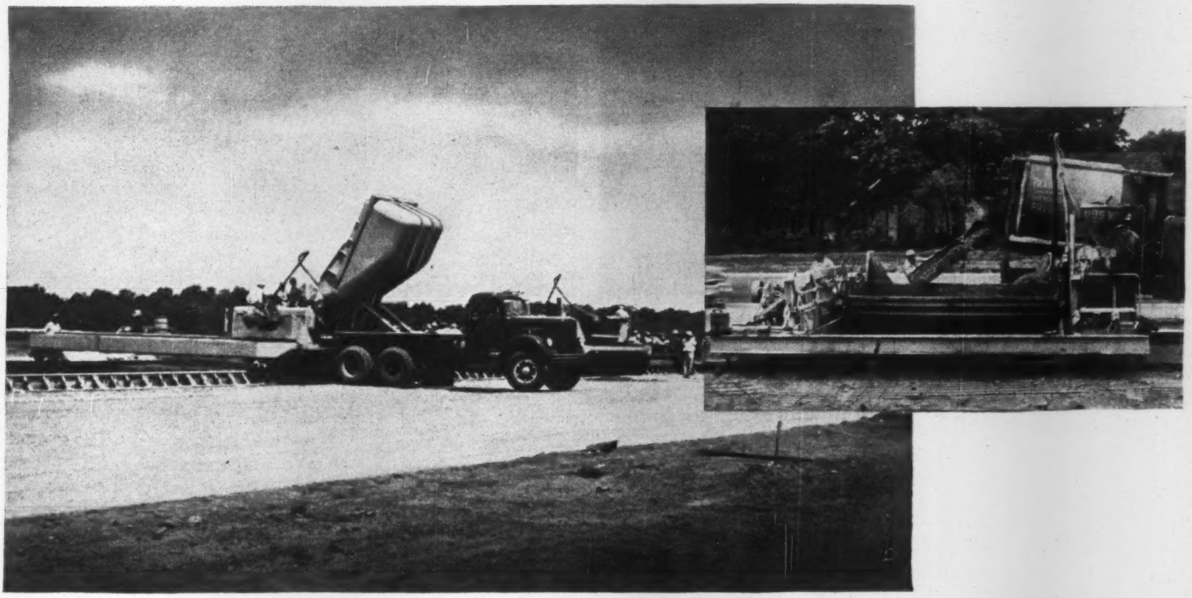
Sand filters, 12 ft thick, make the transitions from the impervious core to the vertical layer and the downstream fill to the horizontal layer. There is also an unofficial transition zone next to the downstream side of the vertical drain. It comprises a selection of coarser material from the downstream fill.

Since the drain system isolates the downstream half of the dam, the downstream shell could be designed as a well-drained embankment rather than with special consideration for its function as part of a dam. As a result, the downstream face has the relatively steep slope of 2:1.

The dam is extensively instrumented. There are the usual settlement markers and piezometers plus tilt meters of a type not generally used in dams.

(*Continued p. 50*)

HOW TO CUT COSTS EVERY TIME YOU PAVE WITH CONCRETE



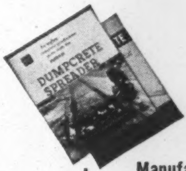
You'll save time and labor...regardless of yardage handled...with the 30-second-spread cycle of Maxon Dumpcrete Concrete Spreaders

15 seconds to spread... 15 seconds to move and strike-off. That's the fast 30-second cycle of Dumpcrete Spreaders that cuts paving costs whether you lay an airport runway or widen a city street.

One man operates the Dumpcrete Spreader... places 180 to 260 cu. yds. of concrete per hour—full depth, base course or top course. Hydraulic controls simplify operation. Widths are adjustable from 11 to 16′ or 20 to 25′, depending on model. And the Dumpcrete Spreader handles concrete of lowest possible slumps.

Team the Dumpcrete Spreader with Dumpcrete Bodies, and you'll get all the cost savings possible through central mixing with non-agitated hauling. Or—use the spreader with transit-mixers to reduce time and labor costs for concrete placement. Contractors proved last season that you can save time and labor either way!

Find out how you can step-up hourly production with the Maxon Dumpcrete Spreader and Dumpcrete Bodies. Send the coupon for catalogs today, or call your Dumpcrete distributor.



MAXON

Dumpcrete Hauling Bodies
and
Dumpcrete Paving Spreaders

MAXON CONSTRUCTION COMPANY, INC.
Manufacturing Division E-9 —2600 Far Hills, Dayton 19, Ohio

NAME________________________

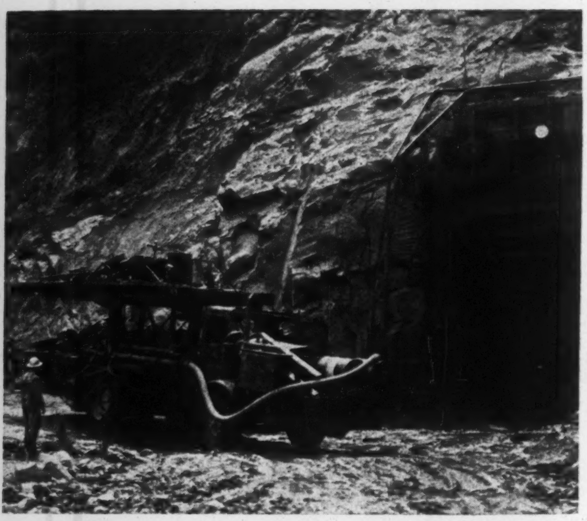
TITLE________________________

FIRM________________________

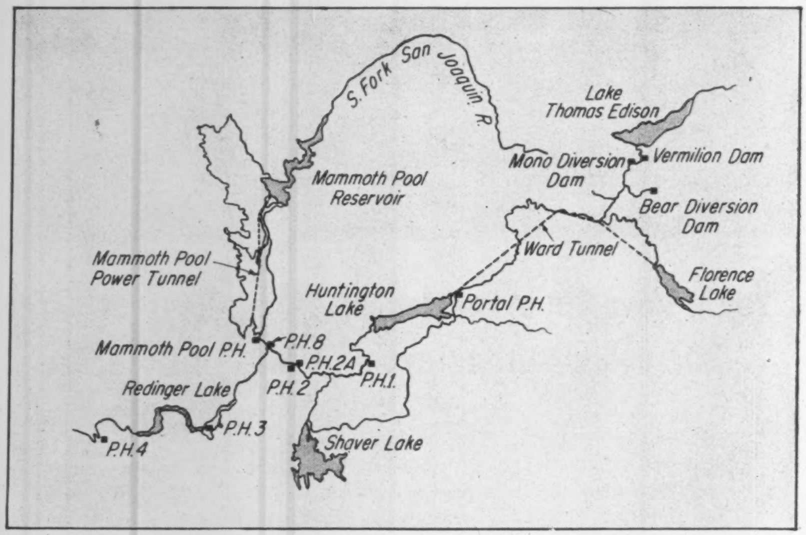
ADDRESS________________________

CITY____________ZONE___STATE____________

Three-deck jumbos were used most in the tunnel.



Two-deck jumbo was used for part of the work.



Big Creek development includes eight powerhouses.

Most fill-type dams are instrumented to show downstream and upstream movement only at the crest, but the Mammoth Pool Dam has tilt meters that indicate horizontal displacement at any level in the fill. They were designed by Stanley Wilson, a consulting engineer of Seattle.

The device consists of measuring and indicating apparatus and a plastic tilt tube set vertically in the embankment to whatever depth movements are to be measured.

The tube is flexible enough to conform to earth movements as the fill settles. The measuring apparatus is lowered into the tube on two grooves 90 deg apart. From tilt-angle measurements sent to the surface electrically every foot, displacements can be figured.

The Mammoth Pool project has been marked by fast progress and unusual methods in both its tunnels.

First came the diversion tunnel, a 28-ft horseshoe, 2,150 ft long. It was holed through in May, 1958, on the 77th day of a 120-day contract. The crew that drove it had been working together since mid-1955. During that period they had driven 14 miles of tunnels on four other High Sierras jobs.

The tunnel was driven from a single heading at a consistently high rate of advance. The record day was 58 ft, the top week, 339 ft.

The diversion tunnel crews followed a trend relatively new in U. S. tunneling: They drilled big center holes with side relievers. Depending on rock hardness, they alternated between a pattern having three burn holes in a vertical row at the center and a similar arrangement with two holes. Center burns and relievers were concentrated within an area about 2 ft in diameter. The lowest holes were located about 7 ft from the floor, placing the 2-ft cluster well below the center of the 28-ft face.

The center hole of the three-hole pattern was drilled 18 in. deeper than the 13-ft depth of the surrounding holes, and only the bottom 12 in. was loaded. The other two burn holes were not loaded. Surrounding relievers fired first and second in the shooting sequence, and the bottom of the center hole fired third. This cleaned out a center section about 2 ft square into which succeeding rings broke. In the two-hole pattern, neither burn hole was loaded.

About the time the diversion tunnel reached completion, a different contractor started work on the power tunnel. Here again, progress was spectacular. The contractor nearly set a world speed record in January, 1959, by driving one heading 390 ft in a six-day week for an average of 65 ft a day.

The power tunnel is a 20-ft horseshoe, 40,000 ft long. The contractor worked it from five headings using four jumbos, each mounting 11 drills. This crew used center burn holes and side relievers too. The reliever pattern was diamond shaped with a loaded center hole and unloaded corner holes. The center hole broke outward, and subsequent shots broke inward.

Another pattern used had five holes in a vertical row at the center. Alternate holes in the row were unloaded.

Power tunnel crews fired about five rounds per shift. Each round advanced the heading 10 or 11 ft, produced about 140 cu yd of solid rock or 185 cu yd of muck, required 650 lb of powder.

The power tunnel runs through granite and metamorphic rock of good quality. With very little scaling, the contractor was able to get the walls unusually smooth. Only about 2% of the length is lined. Friction reduction alone could not justify the added expense of lining. The invert is lined, however, to prevent migration of tunnel fines through the turbines, to reduce friction and to facilitate access.

Where soft seams occurred, the rock was gouged out and replaced with pneumatically placed concrete. Only the concrete was used for seams no more than a few inches wide. Wire mesh was installed to hold the concrete in seams 2 or 3 ft wide.

The surge shaft is somewhat unusual in construction. Instead of widening at the top, it has two horizontal blind drifts several hundred feet long. These provide extra capacity for sudden water demands at the powerhouse. They play no part in pressure surges, however. One of the drifts is partly lined because of bad ground. The top 70 ft of the surge shaft itself is also lined.

Control works for the power tunnel are located about 700 ft from the intake end. The tunnel ends on a hillside above the powerhouse and a penstock drops down the hill to the turbines. Installed generating capacity at the powerhouse is 150,000 kva—two 75,000-kva units.

The Mammoth Pool project is the newest unit in Southern California Edison's Big Creek hydroelectric development, a tight cluster of dams, reservoirs, tunnels and powerhouses on the western slopes of the Sierra Nevada.

From small beginnings in 1911, the Big Creek development now includes eight powerhouses with a generating capacity of 690,000 kw; five reservoirs with a storage capacity of 537 million acre-ft; a dozen or more dams of various sizes and types; and several tunnels and conduits, most notable being the Ward Tunnel, a 13-mile bore of 15x15-ft cross section.

The Mammoth Pool project raises the utility company's Big Creek investment to $212 million.

General design and over-all supervision of the Mammoth Pool project was carried out by the Southern California Edison Co.; R. W. Spencer, manager of engineering; Harold Barber, Big Creek project engineer; and Neville S. Long, Mammoth Pool resident engineer. Karl Terzaghi, Julian Hinds, Ian Campbell and Stanley D. Wilson were the utility's consultants on design of the embankment. The dam and powerhouse were designed and built by Bechtel Corp., San Francisco. Karl Taylor was Bechtel's project engineer, George Saul the project manager. Utah Construction Co., San Francisco, constructed the power tunnel. Macco Corp., Morrison Knudsen Co., Inc., & Associates drove the diversion tunnel.

Tailor-made to give you more efficient blasting! **BEMIS EXPLOSIVES BAGS**

Bemis Explosives Bags for ammonium nitrate and nitro-carbo-nitrate explosives are tailor-made to your requirements — to give you more efficient blasting.

More economical: Use of Bemis Explosives Bags and ammonium nitrate mixtures can save up to 50 percent on explosives costs.

Easy to fill: Bemis provides technical assistance, manufactures equipment to speed up bag filling.

Wet hole or dry hole . . . here are just a few of the Bemis Explosives Bag constructions in use:

Burlap bag with heavy-duty polyethylene liner. The rugged burlap absorbs the punishment of handling or jagged holes. Poly liner provides waterproofness.

Flexiply® bag with poly liner. Here three plies of rugged creped wet-strength kraft provide the toughness.

Laminated bags. Constructions of burlap, kraft paper, polyethylene and pliofilm — in varied combinations — are all performing satisfactorily in the pits and on construction sites.

Write today for sample bags and additional information on Bemis Explosives Bags.

Bemis

Where flexible packaging ideas are born

General Offices—408- Pine St., Box 19, St. Louis 2

NO POWER NEEDED for these Sound Powered **TELEPHONES**

They operate in any emergency over a distance of many miles. Can be moved with the job as it progresses or serve permanently. Indoor and outdoor models. Selective ringing, common talking.

Write for catalog

HOSE-McCANN TELEPHONE CO., INC.
25TH ST. & 3RD AVENUE. BROOKLYN 32. N. Y.

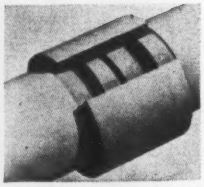
TERMINAL BOX

"Not a 'comeback' in 18 years" ...with Transite Sewer Pipe

says Anthony Garcia, President
Allerton Construction Co., New York

"In my eighteen years of installing Transite sewer mains and house laterals, I have never had a 'comeback' because of line failures. Most of the installations have been 100% under water. Therefore, tight joints that stay tight are absolutely essential! For these reasons Transite has always been my choice for sewer line service. I never worry about passing leakage or infiltration tests. I play it safe —with Transite."

You'll want to read how Johns-Manville Transite® Pipe has helped other contractors increase their profits and productivity . . . in the informative and interesting new, 8-page booklet, TR-206A. Send for it now! Address Johns-Manville, Box 14, New York 16, New York. In Canada, Port Credit, Ontario.



JOHNS-MANVILLE

JOHNS-MANVILLE JM PRODUCTS

Formula for Proper Blasthole Spacing

By G. L. Spaeth

Monsanto Chemical Co. has developed a method of figuring borehole spacing for blasting with ammonium nitrate blasting agents.

The system is based on theoretical equations modified by actual field observations.

The phenomenal increase in the use of fertilizer grade ammonium nitrate as a blasting agent ingredient in recent years points up the need for application methods.

The material accounts for nearly half the total annual consumption of explosive ingredients for all purposes in the United States.

The basic determination to be made is the maximum distance from the borehole at which the blast will fracture rock. This distance is called the critical radius, CR. Equating:

$$CR = \frac{K}{12}\sqrt{\frac{Pe}{S}}$$

Where: $K = 0.8$ (average value for most rocks)
Pe = peak explosion pressure (psi)
S = ultimate tensile strength of the rock (psi)

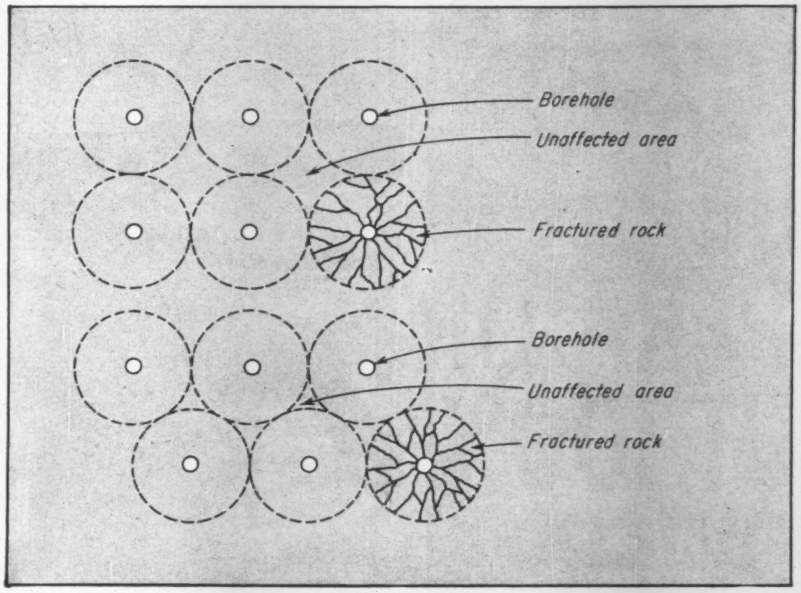
The values of maximum hole spacing, which equals 2CR for oxygen-balanced, prilled ammonium-nitrate fuel-oil mixtures, are given in the accompanying table for many common types of rock.

The following is an example of how to use the table:

Rock type—strong limestone
Borehole dia—6 in.
From table:
Spacing = 2.30 ft/in. of borehole dia
Spacing = 6 × 2.30 = 13.8 ft

Although ultimate tensile strengths of other rock types are not available at present, adequate values could be assumed.

If the assumption is true that shock waves are generated in all directions equally along a horizontal plane, then the zone of effective breakage from each borehole takes the shape of a cylinder with a diameter equal to twice the critical radius and as long as the borehole is deep.



STAGGERED PATTERN results in a considerably smaller area of rock unaffected by ammonium nitrate-fuel oil blasting mixture.

In multiple row shooting, neglecting the effects of additive shock fronts from adjacent holes or simultaneous detonations, the cylinders of effective breakage should be so located that there is no unnecessary overlap and a minimum unaffected area between cylinders.

Since the staggered pattern (drawing) results in the smallest possible unaffected areas between holes, it appears to be the best for multiple-row shooting. Other variations of this pattern might be necessary, depending on the shape of the area to be blasted or the amount and direction of the desired rock throw.

Typical Borehole Spacing

Rock Type	*Tensile Strength Psi*	*Spacing Ft/In. of borehole diam*
Strong Granite	1298	1.92
Strong Anhydrite	1220	1.97
Strong Limestone	890	2.30
Average Granite	888	2.32
Marble	860	2.37
Weak Anhydrite	800	2.45
Graywacke	700	2.62
Strong Sandstone	583	2.85
Average Limestone	480	3.15
Marlstone	480	3.15
Weak Granite	422	3.37
Average Sandstone	412	3.40
Salt (Potash-Halite)	400	3.46
Greenstone	380	3.55
Weak Limestone	280	4.12
Weak Sandstone	280	4.12

In the Monsanto formula, peak explosion pressure is used instead of the pressure exerted on detonation (detonation stability reaction pressure). Because of the relatively slow explosive reaction of this mixture, the peak pressure is developed not at the front of the wave, as in most conventional explosives, but about one millisecond later. This delayed peak is the effective fracturing pressure generated in the blast.

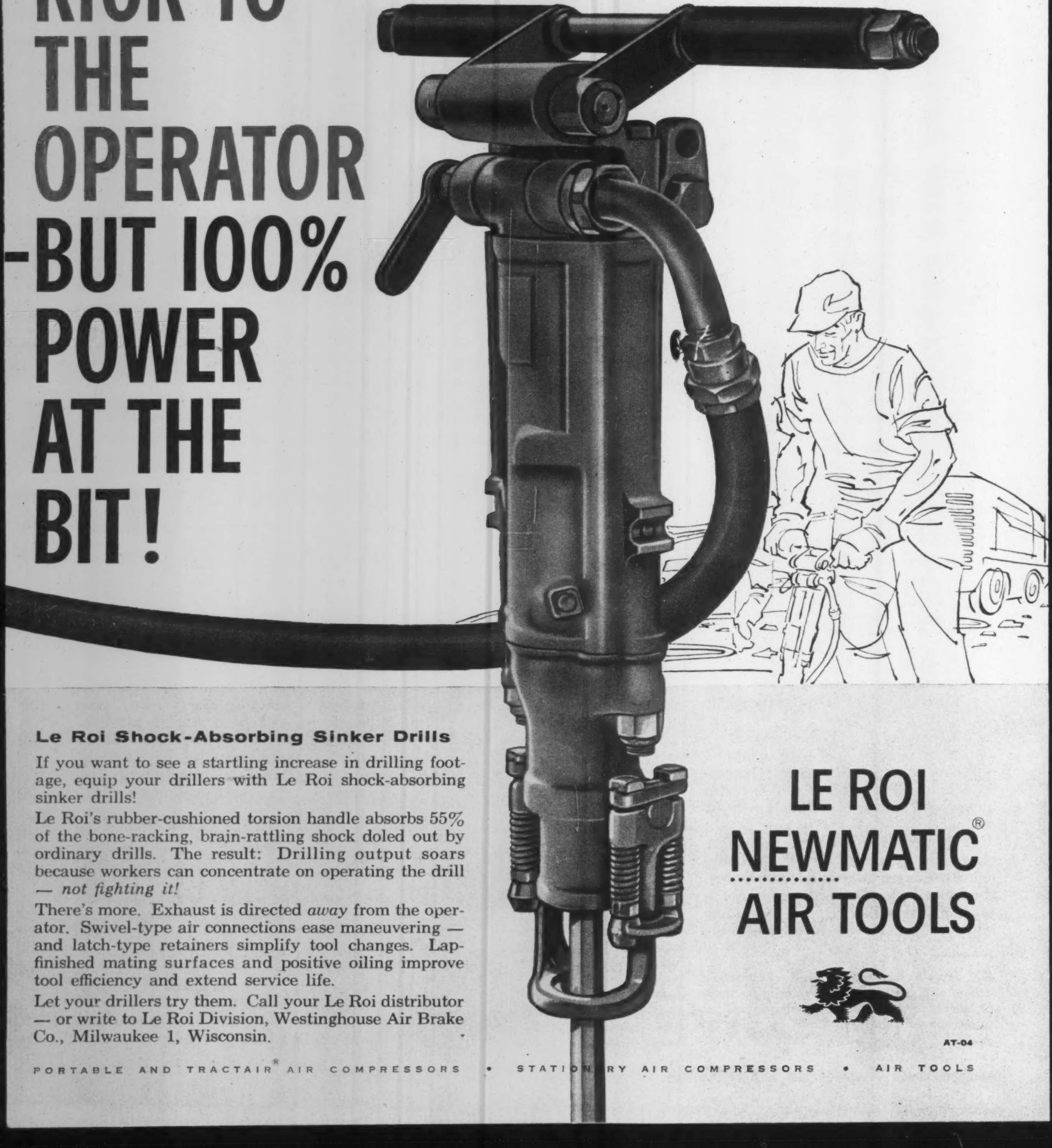
The Monsanto system may not adapt to every shooting requirement. It is meant as a guide or starting point for blasting at any particular site. Subsequent adjustments may be necessary, but in many cases the system has proved accurate enough to eliminate later changes in spacing.

The system may not be valid in the case of small-diameter boreholes, since the hole-size may change appreciably before the blast attains peak pressure. The formula is also questionable at less than five-millisecond to ten-millisecond intervals; strain waves and crack developments might mutually interfere. Simultaneous detonation may permit the spacing to be increased as much as one and one-half times.

Monsanto plans to publish details on the spacing method shortly.

__Mr. Spaeth__ has worked with construction, mining and quarrying companies in his study of ammonium nitrate blasting agents as supervisor of Monsanto Chemical Co.'s Industrial Technical Service program.

55% LESS KICK TO THE OPERATOR -BUT 100% POWER AT THE BIT!



Le Roi Shock-Absorbing Sinker Drills

If you want to see a startling increase in drilling footage, equip your drillers with Le Roi shock-absorbing sinker drills!

Le Roi's rubber-cushioned torsion handle absorbs 55% of the bone-racking, brain-rattling shock doled out by ordinary drills. The result: Drilling output soars because workers can concentrate on operating the drill — *not fighting it!*

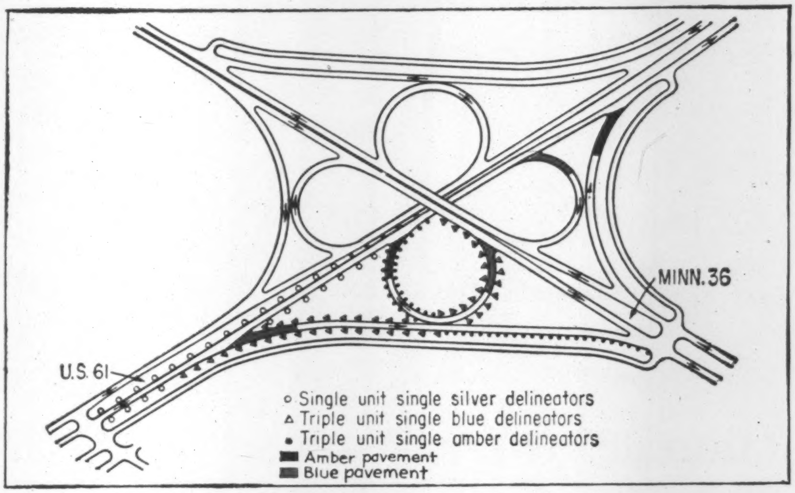
There's more. Exhaust is directed *away* from the operator. Swivel-type air connections ease maneuvering — and latch-type retainers simplify tool changes. Lap-finished mating surfaces and positive oiling improve tool efficiency and extend service life.

Let your drillers try them. Call your Le Roi distributor — or write to Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wisconsin.

LE ROI NEWMATIC® AIR TOOLS

AT-04

PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS


MINN.36
U.S. 61
○ Single unit single silver delineators
△ Triple unit single blue delineators
● Triple unit single amber delineators
■ Amber pavement
■ Blue pavement

Unusual interchange treatment shows . . .

Color-Coated Roads Aid Drivers

Color-coated reflective road surfaces can ease traffic flow by increasing drivers' discernment of interchange ramps, according to results of a field test conducted by the Minnesota Department of Highways and Minnesota Mining and Manufacturing Co.

Researchers developed an unusual reflective treatment of a typical interchange. This treatment includes a color-code system in which turnoffs and exit ramps are marked with blue: blue reflective signs, blue delineators and blue reflective coating of the pavement surface.

On-ramps and zones of merging traffic are marked by yellow, the standard color for caution: yellow delineators and yellow reflective treatment. Through-lane delineation is white with standard green background signs.

The coating applied to the roadway surfaces consisted principally of 20-40 mesh reflective particles and associated binder applied by conventional marking techniques with a modified, commercial striping machine.

During a seven-week test period, engineers studied driver reaction and behavior under five separate conditions of illumination. Electronic measuring devices collected data and 1,133 drivers were interviewed. All studies were conducted under night driving conditions during the hours of 9:30-11:30 p.m.

J. E. P. Darrell of the Department of Highways, Marvin D. Dunnette of the University of Minnesota, and Joseph T. Fitzpatrick of the 3M Company reported the results of the tests at the annual meeting of the Highway Research Board. Driver comments were reported to show a recognition and appreciation of the integrated reflective treatment. Darrell and Dunnette said that the new guidance system is "highly accepted, easily followed, and generally helpful."

Fitzpatrick says the new markings are designed as an economical supplement to existing traffic guidance devices.

Automation Spurs Demand For Direct Current Motors

The age of automation is rejuvenating a bygone era for electric motors. The need for accurate control is returning direct-current motors to popularity from the comparative oblivion into which they faded after the electric power utilities changed over to alternating current several decades ago.

CONTROL ENGINEERING, a McGraw-Hill publication, said last month that manufacturers of dc drives—motors and the controls that go with them—are predicting record sales in 1960.

Rapid automation in the steel and paper industries, with an attendant call for adjustable speed motors, is setting the demand pace. Since ac motors are generally fixed-speed devices, the automating machinery makers are reverting to dc motors.

Example of the strides already made in the dc field is the newly designed, low-inertia dc servomotors that can switch from 4,000 rpm in one direction to 4,000 rpm in the opposite direction in one-quarter second.

Major drawback in the use of dc drives is the necessity for rectifiers to convert ac power supply to dc.

THIS IS THE CORRECT EASY WAY

1 **PEEL** the STANPAT from its backing.

2 **PLACE** the STANPAT into position on the tracing.

3 **PRESS** into position . . . will not wrinkle or come off.

Don't chain your engineers to time-consuming routine on repetitive blueprint items . . . free them for more creative work and save countless hours of expensive drafting time with STANPAT.

STANPAT prints these items on tri-acetate sheets that are easily transferred to your tracings. No special equipment required . . . reproductions come out sharp and clear . . . and STANPAT is incredibly inexpensive.

19 YEARS OF SERVICE TO INDUSTRY

STANPAT COMPANY
Whitestone 57, N. Y., U. S. A.
Phone: FLushing 9-1693-1611

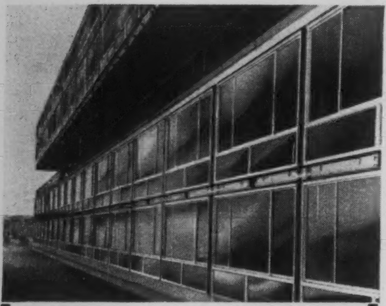
☐ Please quote on enclosed samples.
☐ Kindly send me STANPAT literature and samples. Dept. 175

Name__________
Title__________
Company__________
Address__________

HORNFLEX

Sealant...

for all the wide open beauty of curtain wall design . . . *with none of the weather sealing problems*



Hornflex Sealant compresses, stretches and flexes with wall movement—yet keeps a solid weather seal at all temperatures. Bonds lastingly to aluminum, glass, steel, concrete and stone to form a watertight seam that stays put.

Hornflex Sealant also has many uses in swimming pool, highway and bridge construction. Write for 8-page catalog, Dept. ENR-144.

HORN
Sun

A.C. HORN COMPANIES
SUBSIDIARIES & DIVISIONS
Sun Chemical Corporation
750 THIRD AVE., NEW YORK 17, N.Y.

Plants in:
ATLANTA • CHICAGO • HOUSTON
DENVER • LOS ANGELES • SAN FRANCISCO • PORTLAND, ORE.
NORTH BERGEN, N. J. • TORONTO

Sales offices and warehouses throughout the United States and Canada.

New Products

'Jimmie' Offers V-6 and V-12

This year GMC has a truck line with a large number of engineering changes, including torsion bar front suspension, coil springs at the rear in light models, redesigned chassis and cabs in all models, new V-6 and V-12 gasoline engines and a V-6 diesel option. The line ranges from a ½-ton pickup to 59,000 lb gvw tractors, according to the manufacturer.

The new engines have 50 basic parts that are interchangeable. They range in horsepower from 150 to 275 and are designed to put out maximum torque at relatively low rpm's.

Conventional cabs are shortened and feature swing-away front fenders for easy service access. Tilt-cab models are fabricated from aluminum. Four-wheel drive is available in ½ and ¾-ton models, and a complete range of factory-engineered tandem axles can be installed on larger models. GMC TRUCK DIVISION, 660 SOUTH BLVD., PONTIAC, MICH.

NEWLIN MACHINERY

Big Diamond T Trucks Revamped

Diamond T has completely revamped its line of heavy-duty vehicles. Trucks built specifically for severe off-highway service, such as dump or mixer use, are supplied with oversize front axles in the 15-18,000 lb capacity class, heat-treated alloy steel frames and full-length frame inner-liners.

Other models range from 21,000 to 60,000 gvw, and can be furnished either with single rear axles or a wide variety of tandems incorporating Hendrickson suspension systems.

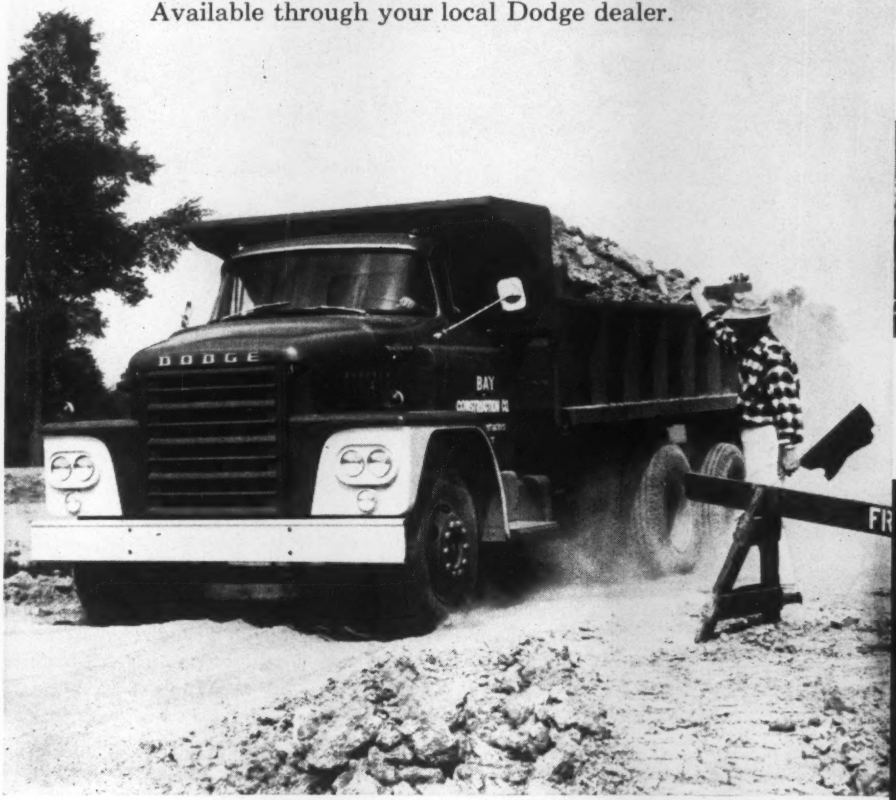
Gasoline powered Diamond T's utilize six and V-8 cylinder engines of up to 235 hp. Engines have wet-sleeve design. Transmission options include 5 to 15-speed combinations. Four varieties of Cummins diesels to 262 hp can be specified. DIAMOND T MOTOR TRUCK CO., INC., 4401 WEST 26TH ST., CHICAGO, ILL.

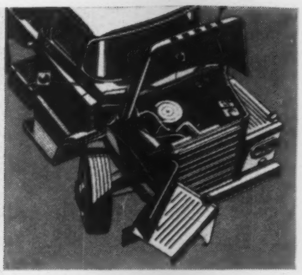
NEW DODGE CAB-FORWARDS thrive on tough construction jobs

They're built big to work big, these brawny new Cab-Forwards by Dodge. And, to fit any job, there are models ranging from 15 to 53 thousand pounds G.V.W. Available in tandem and single-rear-axle models. Straight trucks and tractors. Gasoline and Cummins diesel power.

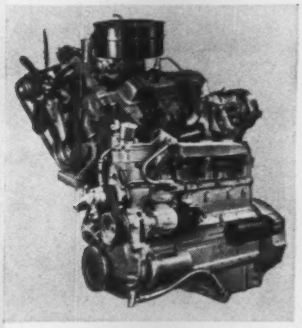
Just 89¾ inches from bumper to back of cab, these heavyweights have handling qualities akin to half-tonners. And their engines are positioned for easiest service access through exclusive Servi-Swing fenders.

For greatest hauling efficiency and economy on tough construction jobs, your big buy is Dodge. Available through your local Dodge dealer.

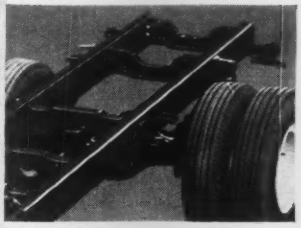




SERVI-SWING FENDERS open out at the pull of a latch to let a man walk right up to the engine for unrestricted servicing. This exclusive Dodge feature spares you the extra cost and bother of a tilt-cab model.



NEW GAS AND DIESEL ENGINES let you pick the kind of power best suited to your requirements. Gas V-8's from 178 to 228 hp.; economical Cummins diesels from 175 to 220 hp., up to 743-cu.-in. displacement.

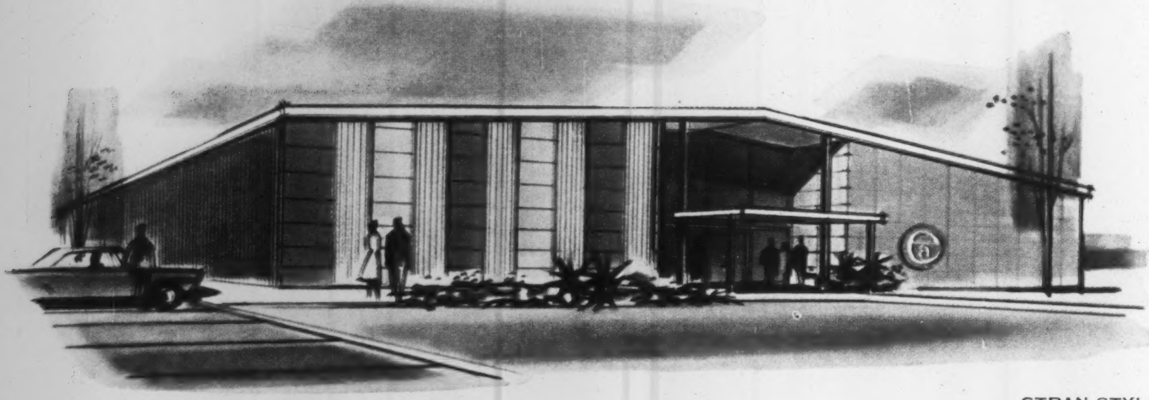


TOUGH DODGE FRAMES of heat-treated, chrome-manganese steel provide exceptional load support while reducing excess chassis weight for C800 models and up.

DEPEND ON
DODGE
TO SAVE YOU
MONEY IN
TRUCKS

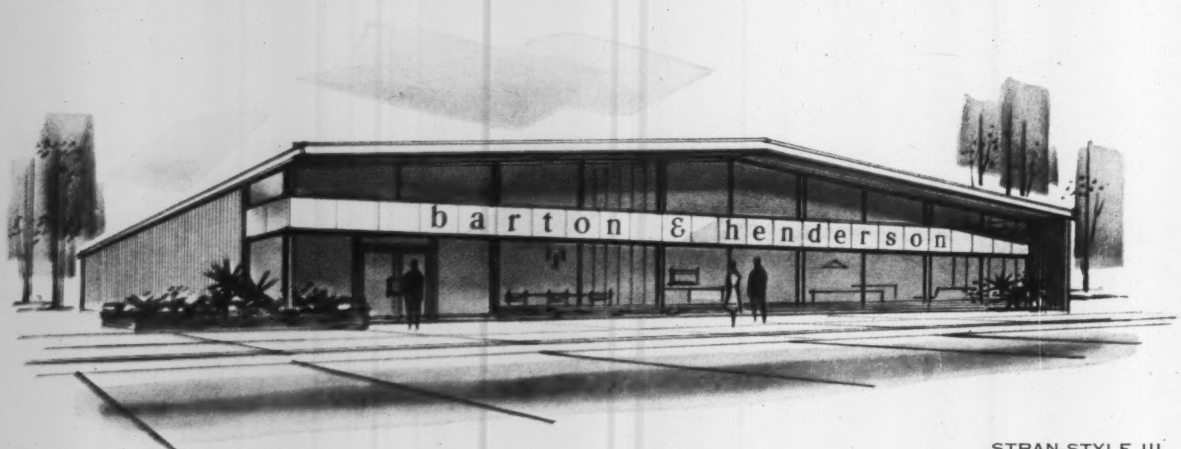
A PRODUCT OF CHRYSLER CORPORATION

the new STRAN-STYLE



STRAN-STYLE I

four custom styles by Harley Earl



STRAN-STYLE III

an original concept in commercial

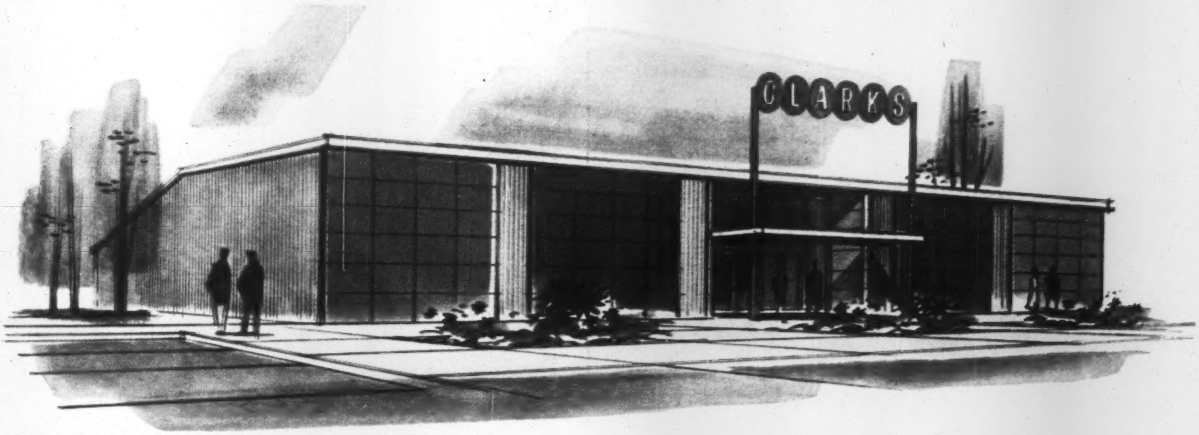
Recently retired as General Motors Vice-President in charge of Styling, Harley Earl has been a leading influence in design for nearly 40 years. Latest achievement of his firm: the new Stran-Style buildings.

Harley Earl Associates, noted industrial designers, have created four graceful, horizon-hugging buildings which enhance any commercial or industrial operation . . . colorfully, functionally blending Stran-Satin color-coated steel, glass and architectural porcelain panels around the efficient spaciousness of column-free interiors.

But the most exciting aspect of Stran-Style lies in its totally new concept, unprecedented in the steel building field. Each Stran-Style building is completely pre-designed, pre-engineered, factory produced—ready for erection on your lot immediately. *Only Stran-Style buildings combine the finest of contemporary design with cost-lowering mass production economy.* Select Stran-Style I, II, III or IV for your business . . . you get a modern structure of unrivaled beauty PLUS extensive savings in time of erection, in maintenance, in total cost.

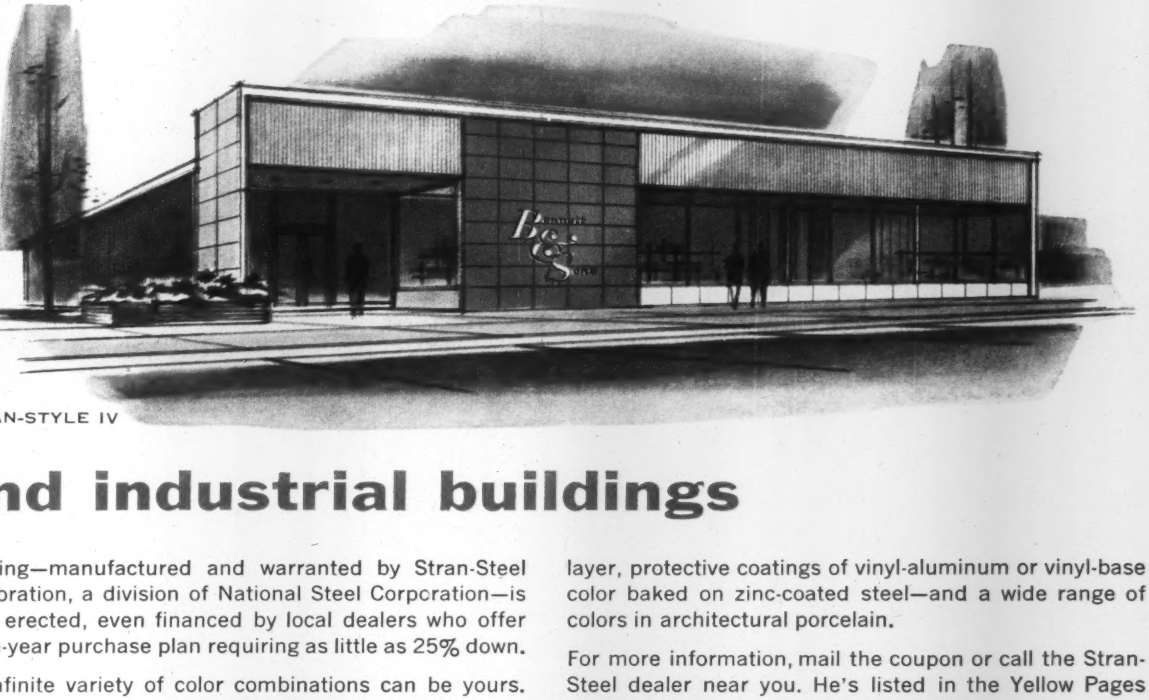
After you select your Stran-Style building, colors and size, you deal with only one source for the complete project. Your Stran-Style

pre-engineered steel buildings!



STRAN-STYLE II

...built by Stran-Steel



STRAN-STYLE IV

and industrial buildings

building—manufactured and warranted by Stran-Steel Corporation, a division of National Steel Corpcration—is sold, erected, even financed by local dealers who offer a five-year purchase plan requiring as little as 25% down.

An infinite variety of color combinations can be yours. Choose from nine sparkling Stran-Satin colors—multi-layer, protective coatings of vinyl-aluminum or vinyl-base color baked on zinc-coated steel—and a wide range of colors in architectural porcelain.

For more information, mail the coupon or call the Stran-Steel dealer near you. He's listed in the Yellow Pages under *Steel Buildings* or *Buildings—Steel.*

Clip coupon and mail to STRAN-STEEL CORPORATION, DEPT. ENR-8, DETROIT 29, MICHIGAN

Please send complete literature on Stran-Style Buildings in Stran-Satin Color. I'm interested in a building approximately______ft. by______ft. to be used for______

Name______ Title______

Company______ Phone______

Address______ County______

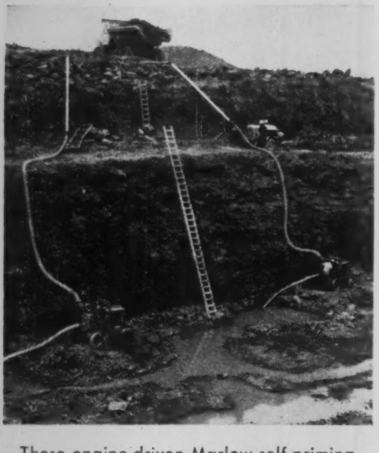
City______ Zone______ State______

STRAN-STEEL IS A DIVISION OF **NATIONAL STEEL CORPORATION**

The **HEART** *of any solution to seepage water*
IS THE PUMP ON THE JOB!

Marlows WORK NIGHT AND DAY

Keep monster trench workably dry!



These engine-driven Marlow self-priming pumps operate on a 24-hour schedule to control seepage water.

The giant Niagara Power Project called for the construction of a $141,000,000, four-mile-long conduit waterways system. Trenches were dug in four separate sections to accommodate huge 46 foot by 66 foot concrete conduits. They will carry water from the upper Niagara north to the Tuscarora Pumping and Generating Plant.

When seepage water became a serious problem on one section, Merritt-Chapman & Scott Corporation installed big Marlow self-priming pumps to keep the area workable. On another section of the project, Gull Contracting Company and L. G. Defelice and Sons, Inc. used Marlow self-primers in the trenches. Operated to carry water over a 75-foot embankment, these pumps handled 90,000 GPH on continuous service.

In addition to a complete line of AGC rated pumps, Marlow also builds the famous "Mud-Hog" diaphragm pump. For full information, write today for Bulletin C-09 and the name of your Marlow dealer.

Marlow PUMPS ®

MARLOW PUMPS
DIVISION OF BELL & GOSSETT COMPANY
MIDLAND PARK, NEW JERSEY
Morton Grove, Illinois • Longview, Texas

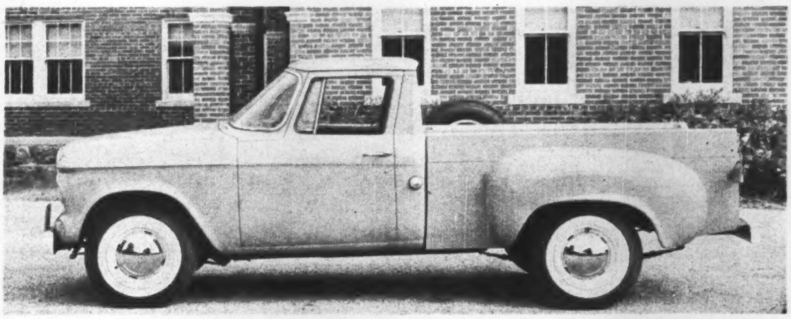
D-470

Chevvy's Suspension Improved

Chevrolet's truck lineup for 1960 features torsion-bar front suspension. Light-duty models combine this new system with coil springs at each rear wheel; larger units have variable-rate, two-stage, leaf-spring rear suspensions.

In tests conducted by the manufacturer to measure maximum safe speed at which a gross load could be handled, a 1960 tandem operated at 625 ton-miles per hour as against 250 for the equivalent 1959 model with conventional suspension.

The company offers 165 different models, ranging in size from ½-ton pickups to 36,000 gvw tandems. Engine options range from a 135-hp ohv six to a 230-hp V-8 that puts out 335 lb-ft of torque at peak. A complete line of optional transmissions is available including a six-speed automatic for the heaviest duty models. Four-wheel drive is offered as an option in ½ and ¾ ton models. Chevrolet Truck Division, 3044 West Grand Boulevard, Detroit, Mich.



'Champ' Pickups Give Visibility

Available in ½ and ¾ ton models, the Champ pickup truck by Studebaker is offered in 5,000, 5,200 and 7,000 gvw (gross vehicle weight) ratings. A choice of two wheel bases—112 and 122 in.—and four engines is offered.

The 5,000 gvw models are equipped with six-cylinder, 170-cu.-in., 90-hp engines. One of the 5,200 gvw models and one of the 7,000 gvw ¾ ton models have six-cylinder, 245-cu-in., 118-hp engines.

Standard engine on the 5,200 gvw, ½-ton model and on the 7,000 gvw, ¾-ton model is a V-8, 259-cu-in., 180-hp power plant. Optional on these models is a V-8, 289-cu-in., 210-hp engine.

The ½ ton with 112-in. wheel base is offered with a 6½ ft pickup box, the 122-in.-wheelbase model is offered with either an 8-ft pickup box or 8-ft platform or stake body. The ¾-ton model, with its 122-in.-wheelbase, is also available with an 8-ft pickup box on platform or stake body.

All models have heavy duty front springs, two stage rear springs and direct double acting shock absorbers front and rear.

A wide variety of optional equipment is available. Studebaker-Packard Corp., South Bend, Ind.

NOW...
CUT PLYWOOD FORM COSTS
WITH THOMPSON'S WATER SEAL

Note these cost-saving features:

- Prevents absorption of water in concrete forms. Forms last longer.
- Saves labor. Eliminates cost of cleaning, sanding and recoating after each pour.
- Thompson's Water Seal permits eight or more pours per plywood form (min. 4 pours per side).
- Eliminates form damage during stripping. Forms can't stick. Won't soften wood, prevents deflection.
- Easy to apply by brushing, dipping or spraying.

Thompson's Water Seal is deep penetrating, colorless, leaves no residue, won't stain concrete; surface is dust-free, ready for painting.

Available in 5 and 55 gallon drums from suppliers to the construction industry.

See catalog in Sweets Architectural file and Light Construction file.

Thompson's
MANUFACTURERS OF FINE PROTECTIVE CHEMICALS SINCE 1929
E. A. Thompson Co., Inc., Merchandise Mart,
San Francisco 3, California

San Francisco, Los Angeles, San Diego, Portland, Chicago, Seattle, Denver, Dallas, Houston, St. Louis, St. Paul, Detroit, Philadelphia, New York City, Memphis, Tampa, Cleveland, Atlanta, Honolulu. Factory: King City, Calif. 5647R

Dodge Design Stresses Function

Dodge trucks for 1960 stress convenient operation and functional design. Light truck models range from 4,250 to 9,000 lb gvw and carry up to 5,000 lb payload.

A 120-hp, six-cylinder engine is standard, with an optional 200-hp V-8 available. Six transmissions are available, including the button-controlled Loadflite automatic. Another option is the anti-spin differential for increased mobility on soft or slippery surfaces.

Newly styled medium tonnage trucks are offered in seven models, with maximum gvw up to 50,000 lb. Power plants are three V-8's at 178, 194, and 202-hp, in addition to two L-head 6s at 125 and 130-hp. Rear axle capacities range from 11,500 to 18,500 lb.

Choice of transmissions includes the Torqmatic, a six speed automatic that "senses" changes in driving conditions and automatically selects the proper gear. A "helper" transmission, available on some models, gives up to 15 forward speeds. On cab-forward models, features include fenders that swing forward to allow a man to stand next to the engine for service on either side, and a removable in-cab engine cover.

The high-tonnage, gasoline-powered units feature the swing forward fenders and have a new design that reduces the cab to only 89¾ in. from bumper to the back of the cab.

Torqmatic transmission is available and engines range up to 228-hp, with up to 400-lb-ft of torque. DODGE TRUCK DIVISION, 7900 JOSEPH CAMPAU AVE., DETROIT, MICH.

Harvester Off-Highway Line

Model F-230-D diesel-powered six-wheeler is one of six off-highway trucks introduced by the motor truck division of International Harvester Co. Rated at 59,000 lb gross vehicle weight, the F-230-D is equipped with a Cummins NH engine. With optional 18,000-lb front axle and 55,000-lb rear axle, it is rated at 73,000 lb gvw.

Three six-wheelers and three four-wheel models are offered with gasoline, liquefied petroleum gas or diesel engines. INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO, ILL.

Protect Openings with

Kinnear Rolling Grilles

They block any doorway with an attractive "open" appearance! And without blocking off air, light or vision. Like Kinnear Rolling Doors, the steel-bar-and-link grilles coil above the opening when not in use. No space wasted! Motor control if desired. Built to fit any door, window, or other opening. Write for free catalog!

The KINNEAR Manufacturing Co.

KINNEAR ROLLING DOORS
Saving Ways in Doorways

1820-40 Fields Avenue
Columbus 16, Ohio
1742 Yosemite Ave.
San Francisco 24, Calif.

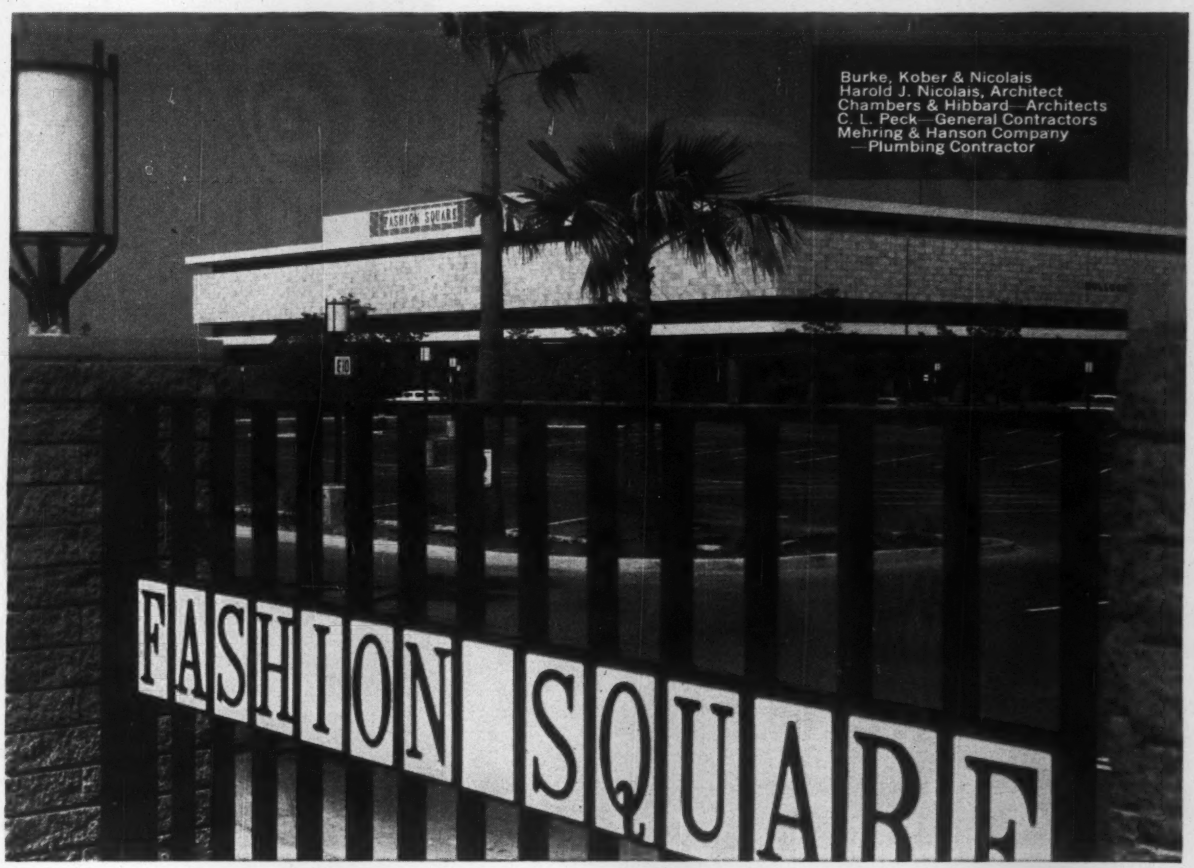
40th YEAR

Spencer White & Prentis INC.

FOUNDATIONS
UNDERPINNING
PILING

CATALOGUE
ON REQUEST

10 E. 40th ST., NEW YORK 16
DETROIT: 2033 PARK AVE
CHICAGO: 221 NORTH LaSALLE ST.
WASHINGTON, D. C.: TOWER BLDG.
PITTSBURGH: EMPIRE BLDG


Burke, Kober & Nicolais
Harold J. Nicolais, Architect
Chambers & Hibbard—Architects
C. L. Peck—General Contractors
Mehring & Hanson Company
—Plumbing Contractor
FASHION SQUARE
FASHION SQUARE

Found—in the finest squares and circles—**steel pipe,** the versatile tubular conductor

A new dimension in consumer services is exemplified by Fashion Square—a "first of its kind" personal service center in Santa Ana, California, conceived and built by nationally famous Bullock's, Inc.

In keeping with the Square's functionalism, *steel pipe* was logically first choice for plumbing, heating, vent lines and fire protection. Because *steel pipe* was readily available—black for fire sprinklers, galvanized for water, vent and drainage lines—its use resulted in low-cost, durable service piping that was quickly installed.

Steel pipe is always first choice when economy *plus* strength *plus* ease of working *plus* choice of finishes *plus* ready availability are required. Whatever the application—water, oil or gas transmission; fire protection, heating, cooling and plumbing; vent and drainage lines; refrigeration, ice making, radiant heating or snow melting; electrical or communications conduit—*steel pipe* serves best.

COMMITTEE ON
STEEL PIPE RESEARCH
150 East Forty-Second Street, New York 17, N.Y.

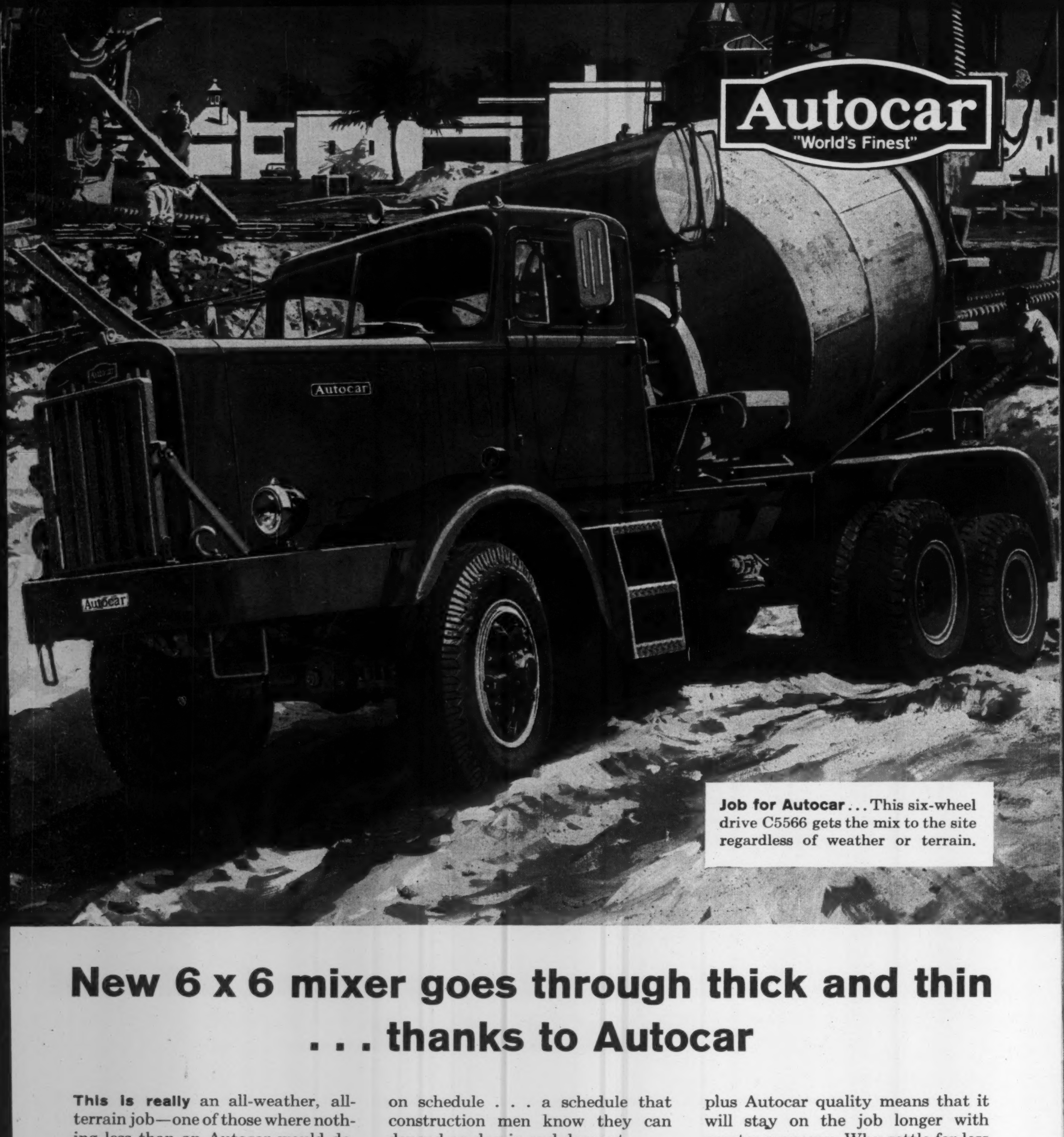
STEEL PIPE IS FIRST CHOICE

- Low cost with durability
- Strength unexcelled for safety
- Formable—bends readily
- Weldable—easily, strongly
- Threads smoothly, cleanly
- Sound joints, welded or coupled
- Grades, finishes for all purposes
- Available everywhere from stock

INSIST ON PIPE MADE IN U.S.A.

Yours for the asking . . .

Write for your copy of the 48-page booklet "Radiant Panel Heating with Steel Pipe." It details the design, installation and operation of radiant heating systems.



Job for Autocar... This six-wheel drive C5566 gets the mix to the site regardless of weather or terrain.

New 6 x 6 mixer goes through thick and thin ... thanks to Autocar

This is really an all-weather, all-terrain job—one of those where nothing less than an Autocar would do.

In a hole or up a hill, on shifting sand or in sticky gumbo, this all-wheel-drive Autocar delivers the mix on schedule . . . a schedule that construction men know they can depend on day in and day out.

Choice of an Autocar means that your truck will be custom-engineered to its specific job. Precision building plus Autocar quality means that it will stay on the job longer with greater economy. Why settle for less than the "World's Finest?"

White-Autocar comprehensive service throughout the U. S. A.

Autocar
"World's Finest"

Division of
The White Motor Company
Exton, Pa.

Men and Jobs

B. A. Vallerga to Join Los Angeles Oil Company

B. A. Vallerga has been appointed director of products engineering for the Golden Bear Oil Co., Los Angeles.

In his new position Mr. Vallerga supervises and directs the engineering and promotional activities of the company, particularly in the area of soil conservation and highway construction. His headquarters are in Bakersfield, Calif.

Before joining the company Mr. Vallerga was managing engineer of the Asphalt Institute for the Pacific Coast Division.

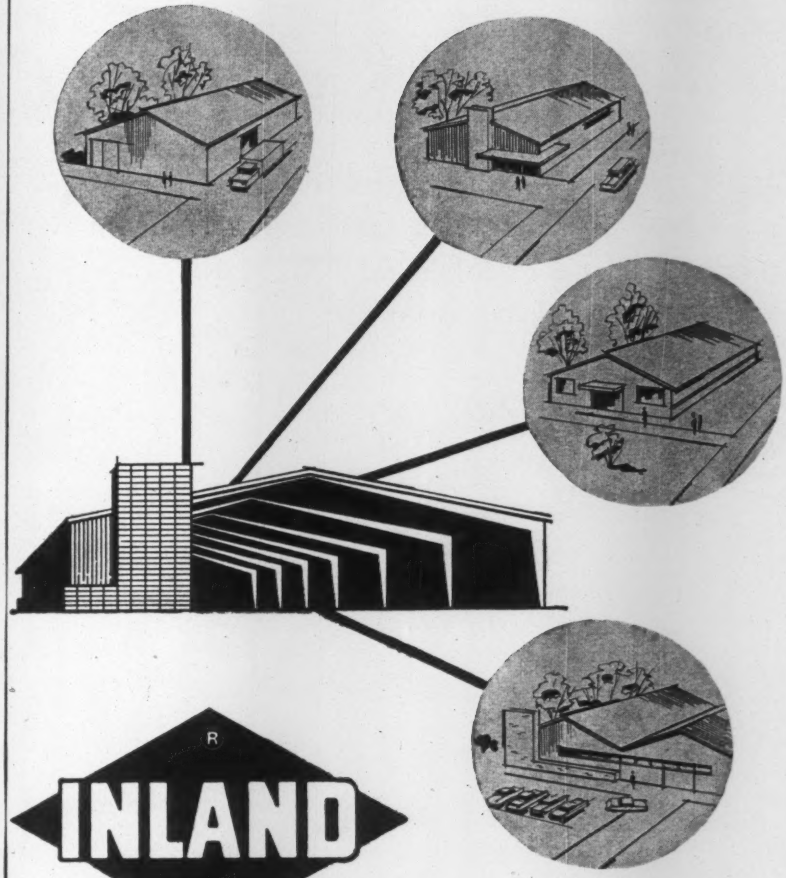
Mr. Vallerga has also been on the civil engineering faculty at the University of California and before that was with a private engineering firm dealing with materials testing and foundation investigations.

Mr. Vallerga is the author of many technical and research papers in the field of asphalt paving technology.

Vacant AED Presidency Filled by Herbert Mayer

Herbert J. Mayer has been named president of the Associated Equipment Distributors to fill the unexpired term of the late Jewel A. Benson, who died February 19. Mr. Mayer had been named senior vice president of AED at this year's annual meeting in Chicago. He is executive vice president of Western Machinery Co. and general manager of Edward R. Bacon Co., San Francisco.

Richard F. Newlin, of Newlin Machinery Co., Kansas City, Kan., has been advanced from vice president to senior vice president, while John R. Borchert of Borchert-Ingersoll, Inc., St. Paul, Minn., has been named vice president of the association.



INLAND®
STEEL BUILDINGS

YOU SAVE DESIGN AND BUILDING TIME

...with Inland Rigid-Frame modules

Load-bearing RIGID-FRAME structurals are fabricated in the factory to save you time on the job. Design and load-bearing data are available to save you time on the drawing board.

Use of the RIGID-FRAME building provides a column-free interior 120 feet wide. The 100% clear, useable space simplifies functional planning and layout.

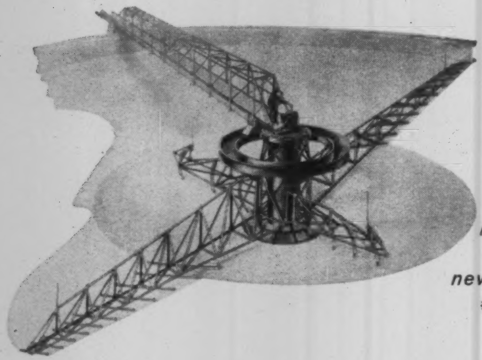
You finish your job in less time because erection is faster. And you save money because Inland RIGID-FRAME buildings often cost far less than those of conventional construction. Write for the name of the Inland Steel Buildings dealer nearest you and a copy of our colorful catalog.

INLAND **RIGID-FRAME** STEEL BUILDINGS
INLAND STEEL PRODUCTS COMPANY
DEPT. D, 4147 WEST BURNHAM STREET, MILWAUKEE 1, WISCONSIN
MB-24R

Process Trends from DORR-OLIVER

A SERVICE TO THE PROCESSING INDUSTRIES

New developments in SEDIMENTATION invite appraisal



Long-term research program at Dorr-Oliver reveals new potentialities for an age-old technique

The technique of separation by sedimentation is one of the oldest arts of processing. It may be employed to produce a more or less clear liquor from a mixture of solids and liquid (clarification), or to concentrate suspended solids into a denser slurry (thickening). It may also be adapted to give fractional separation of particles of various sizes or specific gravities (hydro-separation).

Modern continuous sedimentation systems, which substitute mechanical means for the old batch methods of slow gravity settling and decanting, date from the invention of the Dorr Thickener in the early 1900's. Although the basic design has remained essentially unchanged, equipment has undergone considerable development. Devices such as multiple compartments and hinged rake arms, flocculation to promote economical handling of colloidal materials, and the combination of several operations within a single tank, have continually expanded scope and versatility.

A long-term project at Dorr-Oliver, aimed at increasing fundamental knowledge, has brought to light many previously unknown principles affecting thickener operation. Relatively simple laboratory tests permit accurate prediction of performance with a wide range of materials. Added to the experience gained in many present fields of application, these developments have resulted in a new understanding of the potentialities of the thickener as a tool for the processing industries.

If your flowsheet offers opportunities where the unit operation of sedimentation may be employed, maybe a fresh appraisal of the various types of Dorr Thickeners is in order. The full cooperation of our engineers and laboratory staff is at your disposal. Dorr-Oliver Incorporated, Stamford, Connecticut.

Dorr-Oliver offers a wide range of equipment, methods and complete systems for the processing industries. Operations include:

ROASTING • DRYING • CALCINATION • CLASSIFICATION • THICKENING • SCREENING • FILTRATION • CLARIFICATION • WASHING • AGITATION • CENTRIFUGATION • ION EXCHANGE • PUMPING

Consultants' Institute Elects Tatlow President

Richard H. Tatlow, III is the newly elected president of the American Institute of Consulting Engineers. Mr. Tatlow, president of Abbott, Merkt & Co., New York City consulting engineering firm, succeeds George S. Richardson of Pittsburgh.

Mr. Tatlow is a native of Colorado and holds two engineering degrees from the University of Colorado. During World War II he was an Army colonel and a member of the Construction Advisory Board of the War Department and was responsible for numerous industrial construction projects.

Elected to serve with Mr. Tatlow as vice presidents of the Institute are Gerald T. McCarthy, partner in Tippetts-Abbett-McCarthy-Stratton, and Harold M. Lewis, both of New York City.

W. R. Barrows Appointed Engineer at Gibbs & Hill

W. R. Barrows is the new chief hydraulic engineer at Gibbs & Hill, Inc., New York City consulting engineers.

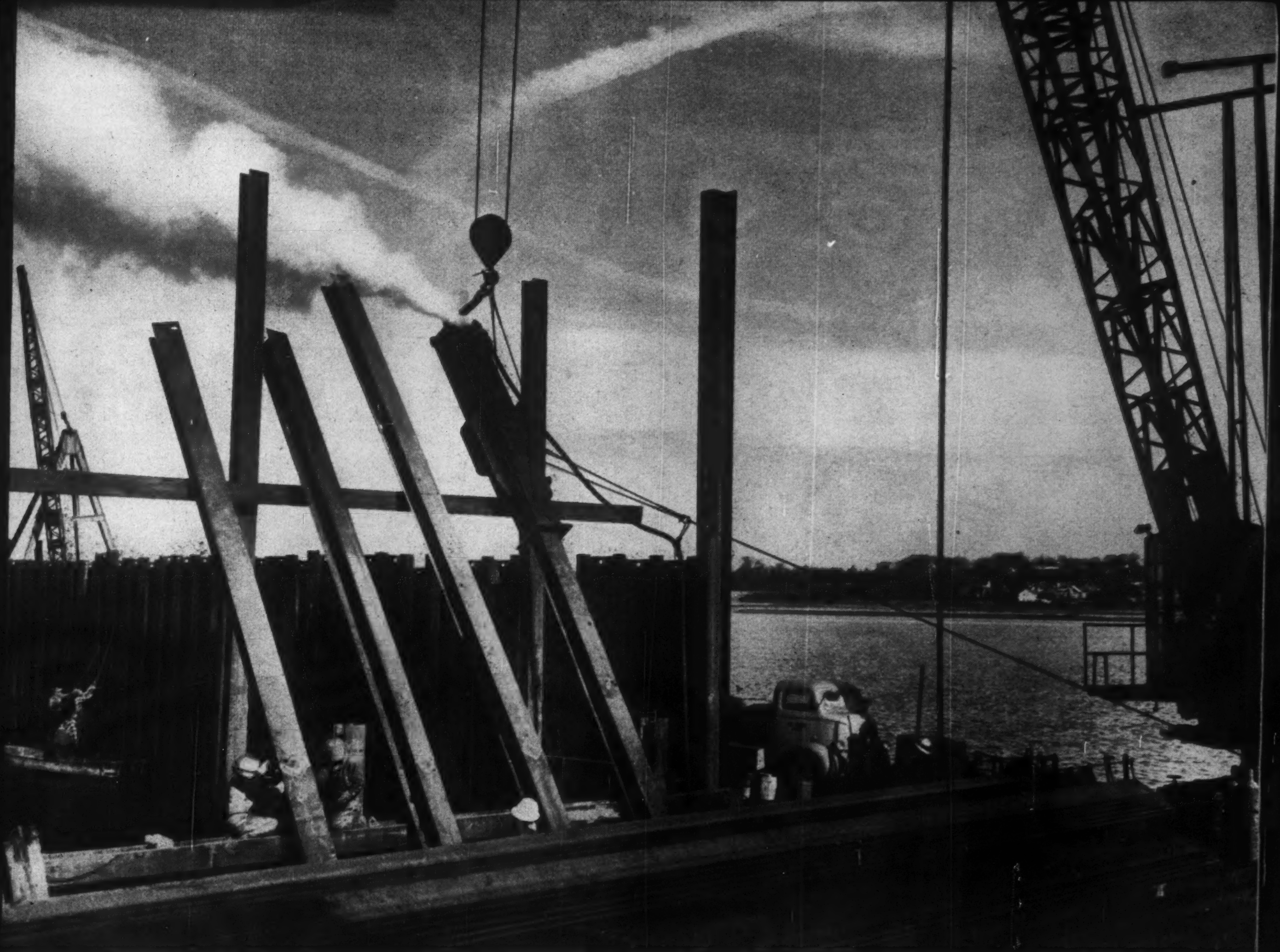
Since 1957, Mr. Barrows held a similar position with the Pioneer Service & Engineering Co., Chicago. He joined Pioneer in 1952 as hydraulic engineer on designs, estimates and reports for hydroelectric projects.

Mr. Barrows has also worked for Erik Floor and Associates of Chicago, where he was chief engineer, and for the TVA. During his 11 years with the authority, he designed and supervised plans for dams, spillways, hydroelectric power plants, tunnels, surge tanks, penstocks and industrial buildings.

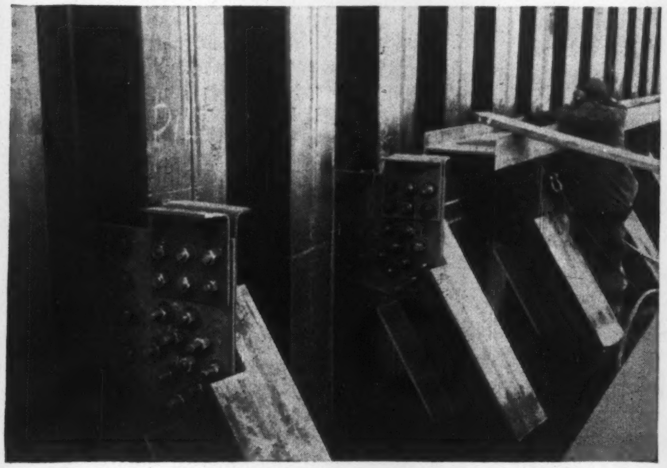
Arthur J. Benline to Head N. Y. Air Pollution Control

Arthur J. Benline, who has been technical director of the New York State Building Code since 1952, has been appointed commissioner of New York City's Department of Air Pollution Control.

Mr. Benline, a graduate of New York University, is both a licensed professional engineer and a registered architect in New York State. At one time he was chief engineer for the R.K.O. realty interests and later an engineer with the Federal Public Works Agency. From 1940 to 1952 he was with the New York City Department of Housing and Buildings. He commanded a Seabee battalion and amphibious forces task groups with naval construction duty in the Mediterranean and Pacific during World War II.



Steel piling bulkhead has batter piles 100-ft long



100-ft-long batter piles support the bulkhead at 6-ft intervals.

Construction of facilities at the new Brayton Point power station of New England Electric System included building a 1,160-ft long sheet piling bulkhead extending into the Taunton River opposite Fall River, Mass.

Using Bethlehem's ZP 32 and ZP 38 piles, the bulkhead protects a coal storage area which will hold 750,000 tons.

At six-foot intervals the bulkhead is braced by 100-ft-long batter piles driven at an angle to bedrock below the surface of the river and fastened to the bulkhead wale and wall by steel plates and Bethlehem high-strength bolts. At high tide, the wale is under water.

The Perini Corporation was general contractor for the bulkhead; New England Electric System designed it.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: **Bethlehem Steel Export Corporation**

BETHLEHEM STEEL

BETHLEHEM STEEL

Cleveland J-40 digs shale and rock 3-5 feet deep for highway drainage

THE JOB: 20 miles of drainage trenching in both inner and outer shoulders of five miles of dual highway for the relocation of U.S. Route 25 near Middletown, Ohio.

CONDITIONS: trench to be cut to grade, 18 inches wide, 3 or 5 feet deep depending on inner or outer shoulder, through very densely compacted shale and rocky material, further densified because much of the grade carried hauling equipment all through a winter, spring and summer.

PERFORMANCE: despite need to replace worn bucket teeth more frequently than usual because of the tough digging, the Cleveland J-40 dug the trench to accurate grade at the rate of 1,800 to 2,000 feet per 9 hour day.

J-40 FEATURES:

- Stability—on wide-spaced crawlers, 1000-hour-lubricated
- 100% control of every operation at the operator's seat
- V conveyor for faster, higher, more efficient spoil discharge
- Pulley-enclosed dual, independent, conveyor drive
- Automatic conveyor shifting from side to side
- Over 30 non-slipping digging speeds
- Digs trench 17½ to 30 inches wide, down to 5½ feet deep.

The CLEVELAND TRENCHER Co.

20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO

Good Everywhere ®

Careers

Public Works

J. C. Womack is California's new state highway engineer, succeeding John W. Vickrey who died (ENR Jan. 7, p. 49. Mr. Womack, who has been in the state's service for 30 years, has been deputy state highway engineer in charge of engineering. While working for the state, he has also served as a consultant in highway planning for the governments of Haiti and Japan.

Robert Pinther, sanitary engineer with the Indian health service, Billings, Mont., has been appointed to a similar post with the Wyoming Health Department.

Harrison Blankstein has been promoted to chief engineer and **Herman Ginsberg** to deputy chief engineer for the borough of the Bronx, New York City.

James Eldridge Blue, city engineer at New Bern, N. C., has been appointed director of public works and city engineer at Statesville, N. C.

Lt. Col. Edward C. Bruce has been assigned to Mobile, Ala., as Deputy District Engineer for the Army Engineers. He will be second in command of an organization of 1,400 employees to build Army and Air Force projects in the Southeast. He comes to Mobile from Fort Campbell, Ky., where he commanded the 70th Engineer Combat Battalion.

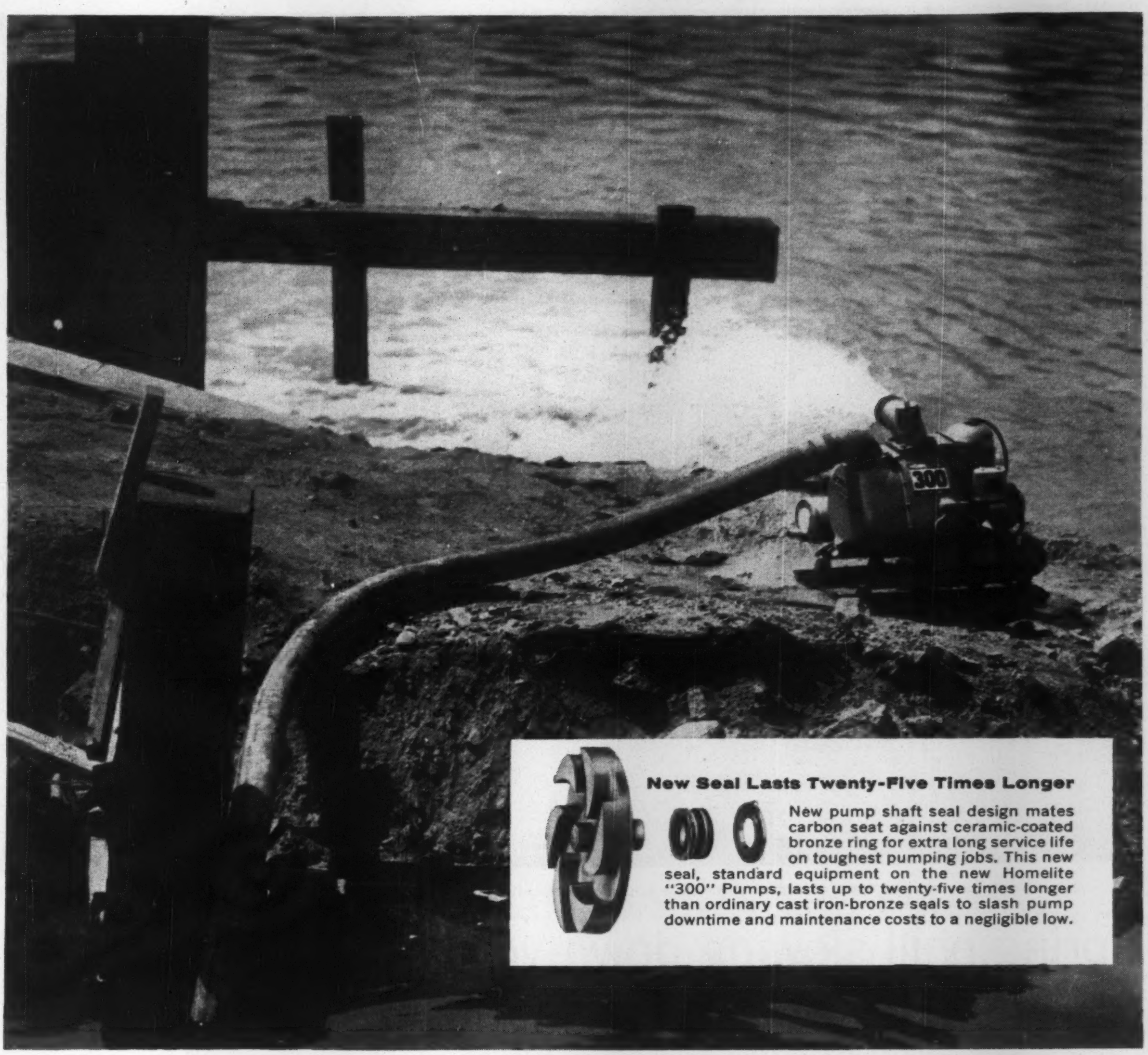
Col. Herrol J. Skidmore has been assigned Director of U. S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va. He has been district engineer at Huntington, W. Va. Col. Skidmore succeeds **Col. A. H. Davidson Jr.** who has been transferred to the Engineer Section, U. S. Army, Europe.

Capt. Harry F. Mumma, chief of military construction for the Omaha district office of the Army Engineers, has been transferred to Hanau, Germany.

Harold V. Varani is Director of Architecture and Engineering in the Philadelphia Department of Public Property. He joined the city service in 1947.

R. Franklin Outcalt, member of the Cleveland architectural firm of Outcalt, Guenther & Associates, has been named to the State Architects Board.

Lyman R. Gillis has been named assistant California highway engineer in charge of administration. For the past two years he has been in charge of the location and design for freeways in the Los Angeles metropolitan area.



New Seal Lasts Twenty-Five Times Longer

New pump shaft seal design mates carbon seat against ceramic-coated bronze ring for extra long service life on toughest pumping jobs. This new seal, standard equipment on the new Homelite "300" Pumps, lasts up to twenty-five times longer than ordinary cast iron-bronze seals to slash pump downtime and maintenance costs to a negligible low.

USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

Get Better Pumping Longer with the NEW HOMELITE "300" PUMPS

Here's the newest and best investment in lightweight, rugged and practical pumping equipment. You get 18,000 gallons per hour capacity. That's 300 gallons per minute. You pump water from ditches, trenches, and other excavations in minutes. Your men get to work faster. And they can stay on the job. Variable throttle control on the new Homelite "300" Pumps keeps excavations workable. Gives you economical seepage control. And their self-cleaning design handles muddy water without clogging.

Light in weight, only 103 pounds, these "300" Pumps are easy to truck and can be carried by one man. They're fast to get to the job . . . fast to do the job . . . in any location. All are guaranteed to self prime at 28 ft. above water level. They're air-cooled, weatherproof . . . can't freeze or overheat.

Three models are available. The quiet, slow-speed model for economical, high-capacity pumping jobs. The standard-speed model for general use on jobs requiring higher discharge pressures. And the high-volume pressure pump model for jetting, pumping through long discharge hose or piping and other jobs requiring high discharge pressures.

See them in action. Ask for a free on-your-job demonstration.

Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE
CARRYABLE
PUMPS GENERATORS • BLOWERS
CHAIN SAWS

HOMELITE • A DIVISION OF TEXTRON INC., 1104 RIVERDALE AVE., PORT CHESTER, N. Y.
In Canada — Terry Machinery Co., Ltd.

Columbia Calcium Chloride, effective all year, is especially beneficial in concrete when temperatures drop below 70°.

Spring chill slowing down your concrete jobs? Stay on schedule with Columbia Calcium Chloride

Warm spring days are almost here. But don't be caught off guard. There are still plenty of days—and nights—ahead when temperatures will skid below 70°. And you're still faced with the problem of keeping jobs on schedule in spite of the lag in concrete set caused by these low temperatures. You can keep cold weather jobs *moving* by adding Columbia Calcium Chloride at the rate of 2% by weight of cement to your mix. Columbia Calcium Chloride gives you these time-and-profit-saving benefits:

Higher Early Strengths—at 40°F, you get 3-day strength in 1 day, 7-day strength in 3½ days. There's no cold weather lag in strength gain; your job stays on schedule.

Faster Initial Set—Under normal conditions, Columbia Calcium Chloride cuts initial set time from 3 hours to 1 hour. At lower temperatures, the effects are even more pronounced. You get finishers on and off the job faster, avoid costly overtime.

Early Form Removal—Rapid strength gain permits removal and re-use of forms in about half the normal time.

Are you getting these Columbia Calcium Chloride cold weather benefits on your concrete jobs? If not, better analyze your batching procedure or contact your ready mix supplier today. Specify Columbia Calcium Chloride. For more information, contact our nearest District Sales Office or write our Pittsburgh Office.

You'll like doing business with Columbia-Southern

COLUMBIA-SOUTHERN CHEMICAL CORPORATION
A Subsidiary of Pittsburgh Plate Glass Company • One Gateway Center, Pittsburgh 22, Pennsylvania
DISTRICT OFFICES: Cincinnati • Charlotte • Chicago • Cleveland • Boston • New York • St. Louis • Minneapolis • New Orleans • Dallas • Houston
Pittsburgh • Philadelphia • San Francisco IN CANADA: Standard Chemical Limited

Obituaries

J. J. Polivka Dies; Noted Designer, Teacher

Jaroslav Joseph Polivka, noted authority on photoelasticity and lecturer at Stanford University, is dead at 73.

Mr. Polivka, who is known for his work in mathematical and experimental stress analysis, has worked with such outstanding authorities as Emperger, Messnager and Frank Lloyd Wright. He designed the Czech pavillions at the Paris International Exhibit in 1937 and at the New York world's fair in 1938.

Mr. Polivka has been a consultant on the Guggenheim Museum in New York, the Johnson Tower in Racine, Wis., and the proposed "butterfly bridge" across the southern arm of San Francisco Bay.

Mr. Polivka came to this country in 1938 to work on the New York Exhibition, and later settled in California. From 1939 to 1945 he was a research associate at the University of California, and, since 1951, a lecturer at Stanford University.

Mr. Polivka received his master's degree at the Technical University of Prague in 1909 and a degree of Doctor of Technical Science in 1917. He also did graduate work at the Federal Institute of Technology in Zurich, Switzerland. He is the author of numerous books and papers, and the winner of several competitions and awards.

Albert J. Pipke, 56, owner and founder of Pipke Brothers, Milwaukee excavating and grading firm.

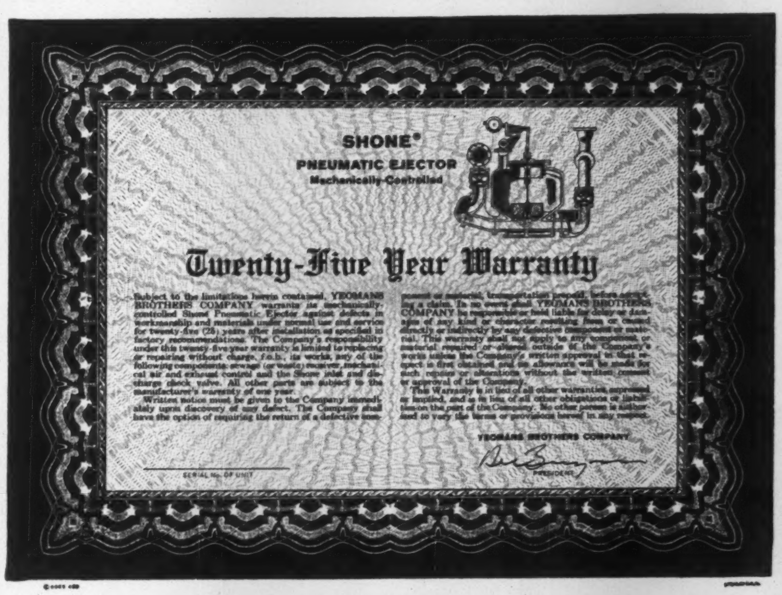
Raymond T. Stuart, Sr., 66, New England contractor and president and treasurer of T. Stuart & Son., Watertown, Mass.

William H. Nicklas, 93, Cleveland architect who was known for his church designs.

Finlay D. Scott, 76, retired vice president of the Clinton Construction Co., Los Angeles. He supervised construction on the city's Hall of Justice and the San Francisco mint.

Bassett Jones, 82, retired partner in Meyer, Strong & Jones, New York City consulting engineers. Mr. Jones was known for his work in designing high speed elevators for skyscrapers and also for his lighting systems, particularly the display he developed for the 1939 World's Fair. A graduate of the Stevens Institute of Technology and MIT, Mr. Jones made studies of metallic corrosion and rust prevention for the Panama Canal.

This Ejector Warranty Puts a Solid Base Under Your Specifications



SHONE®
PNEUMATIC EJECTOR
Mechanically-Controlled

Twenty-Five Year Warranty

Subject to the limitations herein contained, YEOMANS BROTHERS COMPANY warrants its mechanically-controlled Shone Pneumatic Ejector against defects in workmanship and materials under normal use and service for twenty-five (25) years after installation as specified in factory recommendations. The Company's responsibility under this twenty-five year warranty is limited to replacing or repairing without charge, f.o.b., its works, any of the following components: sewage (or waste) receiver, mechanical air and exhaust control and the Shone inlet and discharge check valve. All other parts are subject to the manufacturer's warranty of one year.

Written notice must be given to the Company immediately upon discovery of any defect. The Company shall have the option of requiring the return of a defective component or material, transportation prepaid, before accepting a claim. In no event shall YEOMANS BROTHERS COMPANY be responsible or held liable for delay or damages of any kind or character resulting from or caused directly or indirectly by any defective component or material. This warranty shall not apply to any component or material repaired or altered outside of the Company's works unless the Company's written approval in that respect is first obtained and no allowance will be made for such repairs or alterations without the written consent or approval of the Company.

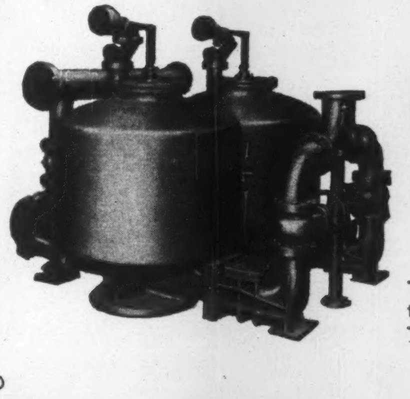
This Warranty is in lieu of all other warranties, expressed or implied, and is in lieu of all other obligations or liabilities on the part of the Company. No other person is authorized to vary the terms or provisions hereof in any respect.

SERIAL No. OF UNIT

YEOMANS BROTHERS COMPANY
PRESIDENT

63 YEARS EXPERIENCE, LONGEST IN THE FIELD... OVER 4200 INSTALLATIONS ...212 SIZES AND TYPES, THE WORLD'S LARGEST JOB-PROVED LINE...A SOLID PRODUCT THAT'S BACKED BY SOLID ENGINEERING!

E-6029



YEOMANS
1999-1 North Ruby Street
Melrose Park, Illinois

This is the SHONE® with mechanical controls. It is the *original* pneumatic ejector. The first SHONE® was installed in 1870.

60-3

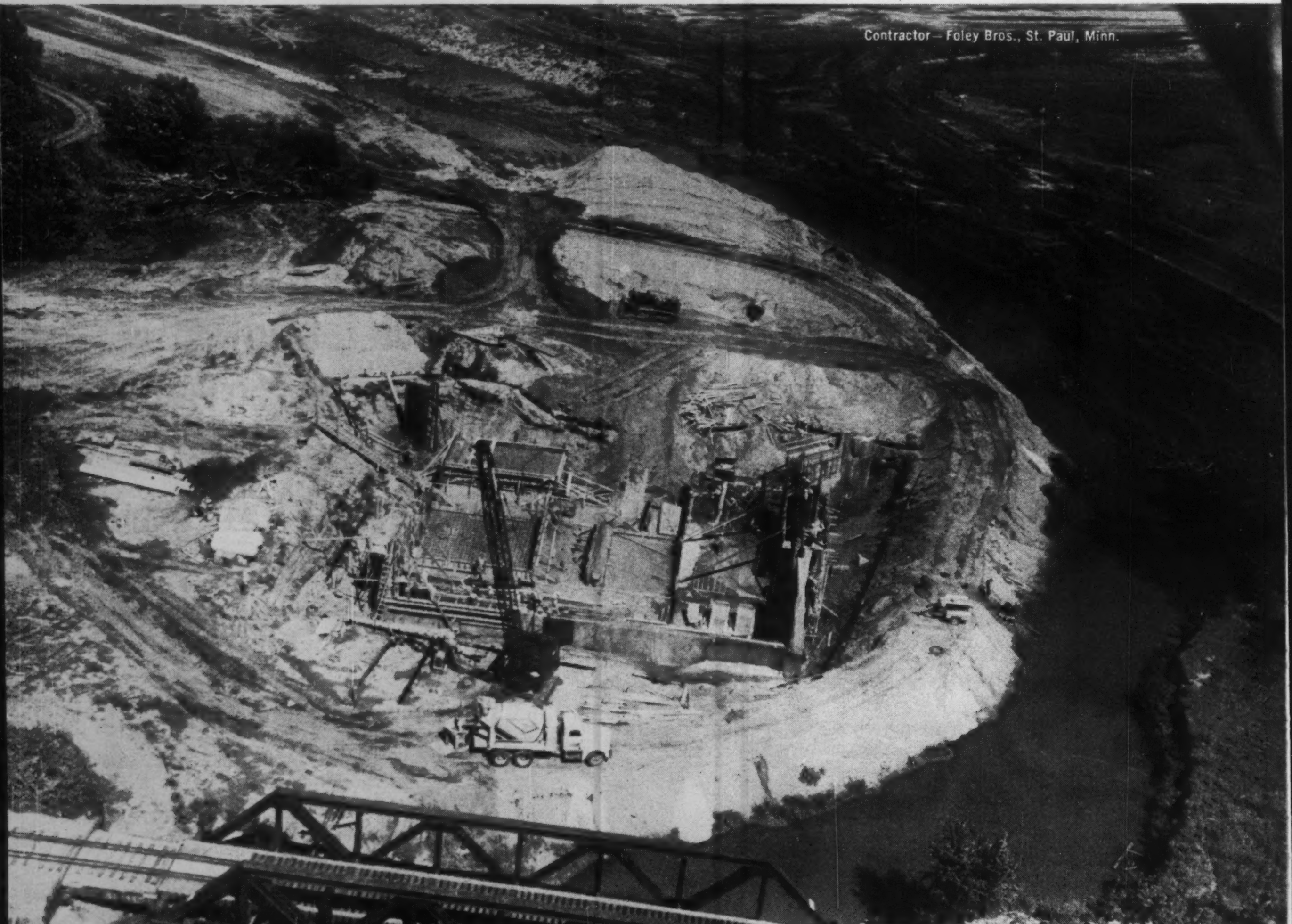
SURE IT'S DRY...

And it's dry more than 15 feet below the level of the river, just a few feet away. What's more, there's an open end ramp that provides easy access to the excavated area. The Sioux River Diversion Dam is well on its way to completion, and the work is in the dry. This is the kind of thoughtful planning and efficient dewatering that is engineered into all STANG-dewatered projects: quick, clean, economical, and always dependable. Anywhere, anytime, be sure—call STANG.

JOHN W.
STANG
CORPORATION
8221 ATLANTIC AVE., BELL, CALIFORNIA

ENGINEERS AND MANUFACTURERS OF DEWATERING EQUIPMENT, WELLPOINTS AND PUMPING SYSTEMS • DEWATERING PLANNING—EQUIPMENT—SERVICE

OMAHA TACOMA MOBILE TULSA MINNEAPOLIS ST. PETERSBURG



Contractor—Foley Bros., St. Paul, Minn.

Books

Two on Economics for Engineers

Principles of Engineering Economy—Fourth Edition, by E. E. Grant and W. G. Ireson. 574 pages. The Ronald Press Co., New York, N. Y. $8.

The new edition of this widely used book on the economic aspects of engineering decision-making is principally an update. Chief change from the third edition is in emphasis on certain topics.

As in previous editions, the book continues to stress two important points: prospective differences between alternatives; and the determination of the return on an investment in capital goods from various investment opportunities.

The importance of income tax considerations is taken up early in the new edition. And a study is made of the extent to which after-tax rates of return are influenced by different methods of writing off cost for tax purposes. The book also explains depreciation methods under recent U.S. tax laws.

In discussing economy studies for public works, the authors go more fully into the relationship between benefit-cost ratio as a criterion for investment decisions and the more conventional criteria based on annual costs or prospective rates of return on investment.

The new edition places heavier emphasis on methods of analysis involving compound interest. Several new interest tables have been added to it to simplify computations.

New Forces in American Business—by Dexter Merriam Keezer and associates in the McGraw-Hill Department of Economics. 278 pages. McGraw-Hill Book Co., New York, Toronto, London. $4.75.

Relatively steady growth and prosperity will be the general rule over the next decade. This is the bold and cheerful conclusion that the authors of this readable book state at the beginning, and support with thoughtful analyses.

Basically, their argument is that there are "built-in stabilizers" in the modern American economy that will confine up and down swings in business to a maximum of about 7%. They analyze these stabilizers and state definite conclusions about each. They do not foresee smooth progress upward, but write on the premise that "a clearer understanding of the forces making for the prospect that prosperity will be the general rule" will help to avoid foolish decisions that could roughen the road.

The "forces" that are discussed include scientific research and development, the changing consumer market, new marketing concepts, government's expanding role, export markets, and even agriculture's price supports. For looking ahead into the Sixties an awareness of these forces will be valuable. This book supplies it in easy-to-take doses.

Interpretation of Aerial Photos

Aerial Photographic Interpretation: Principles and Applications—by D. R. Lueder. 452 pages. McGraw-Hill Book Co., New York, Toronto, London. $17.50.

In the preface, the author refers to the new natural science of aerial-photographic interpretation, which he defines as a new intellectual discipline, using induction and deduction, and says that it treats the earth's surface as an integrated physical and ecological whole. This technology should not frighten away civil engineers interested in the subject, since Mr. Lueder has written a highly usable book.

The book treats aerial photographic interpretation as an aid to integrated terrain studies of every type, covering both theory and applications.

The elements of the photographic pattern, such as land form, rock type, surface drainage, erosion, gray tones, vegetation, and land use are fully discussed. Careful attention is given to their significance and interpretation. Photo analysis, photo reading, and photogrammetry are considered.

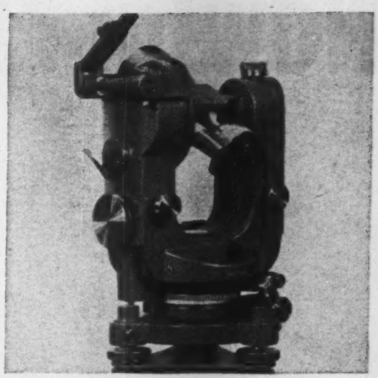
A sizable section of the book is devoted to land forms and rock types as they appear on the photograph.

Applications of aerial photographic techniques in civil engineering and other scientific fields are discussed. An appendix is devoted to the integration of photogrammetry and electronic computation in highway engineering.

Plumbing Book Updated

Plumbing—Third Edition, by Harold E. Babbitt. 649 pages. McGraw-Hill Book Co., New York, Toronto, London. $13.50.

The update of this excellent reference work on plumbing in buildings is based on the National Plumbing Code, which was adopted as an American Standard in 1955. Changes have been made in the text to take into account



British Theodolite available in America

An Optical Micrometer Theodolite, from Cooke, Troughton & Simms Ltd., Britain's oldest maker of surveying instruments, has been introduced in the United States.

The 9-lb. Model V308 can be read directly to 20 sec. of arc and by estimation to 5 sec. The instrument features brilliance of field of its circle-reading microscope, high magnification of the graduation system and easy reading. The telescope is of the internal-focusing type with a spiral focusing eyepiece.

The V308, complete with spirit levels, optical plummet, centering device and either telescopic or non-telescopic tripod, is packed in a lightweight case.

V308 is a companion to the famed Tavistock Theodolite. Write for information on both.

PRECISION INSTRUMENTS INC.
1900 FIFTH AVE., TROY, NEW YORK

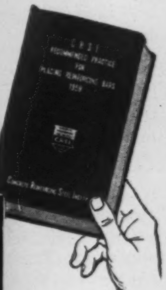
New book tells

Where . . .
How . . .

to place reinforcing bars

***Written for* bar setters and inspectors . . . as a manual for apprentice courses . . . and a reference for specification writers, architects, engineers, and detailers.**

Contains complete specifications and instructions for placing reinforcing bars, welded wire fabric, and their supports.

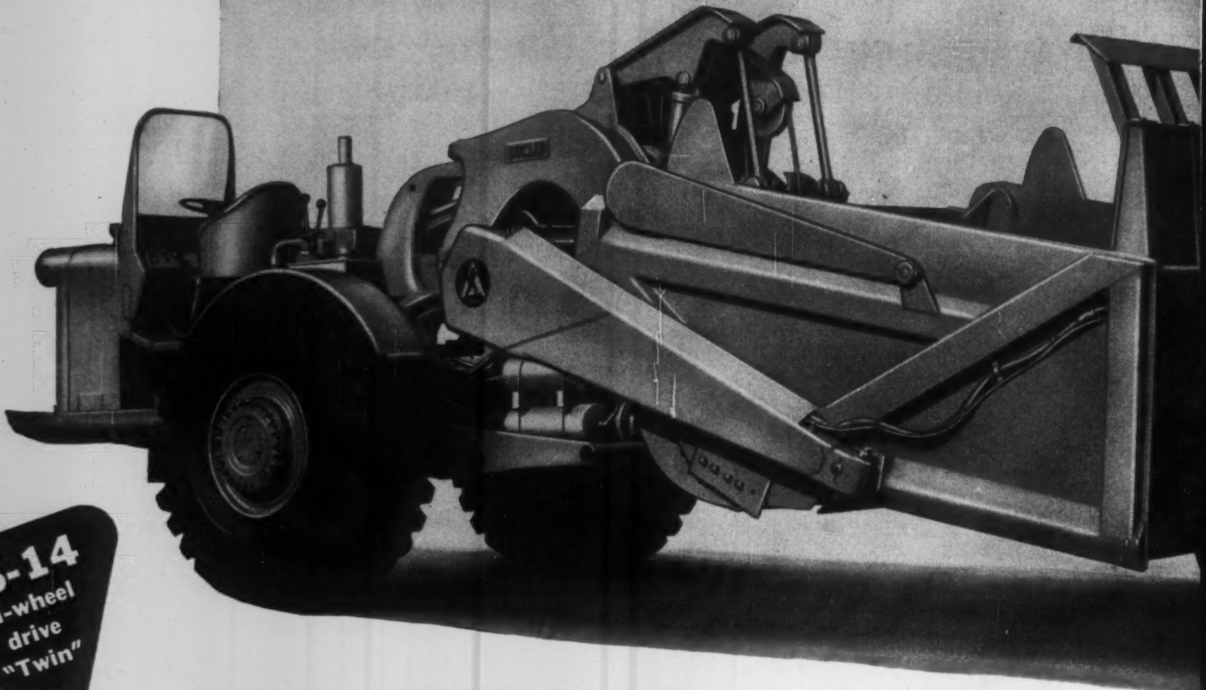


Prepared under the direction of the C.R.S.I. Committee on Engineering Practice.

287 PAGES
HANDY POCKET SIZE
$3.00
No C.O.D. orders accepted
Refund if returned within 10 days

Concrete Reinforcing Steel Institute
38 South Dearborn Street (Dept. L)
Chicago 3, Illinois

Now!... Euclid Twin-Power



TS-14
all-wheel drive "Twin"

*heaped capacity at 3:1 is 16 yds., at 1:1 slope, 20 yds.

HERE'S BIG NEWS for scraper users. The many cost cutting advantages of all-wheel drive are now available in a medium-size scraper, the Euclid Model TS-14. With Twin-Power and a total of 296 h.p. this new "Euc" has already proved itself an outstanding performer. A one-man, one-machine earthmoving spread, it gets more work done at lower cost than any other scraper of comparable size . . . its high productive capacity brings a better return on investment.

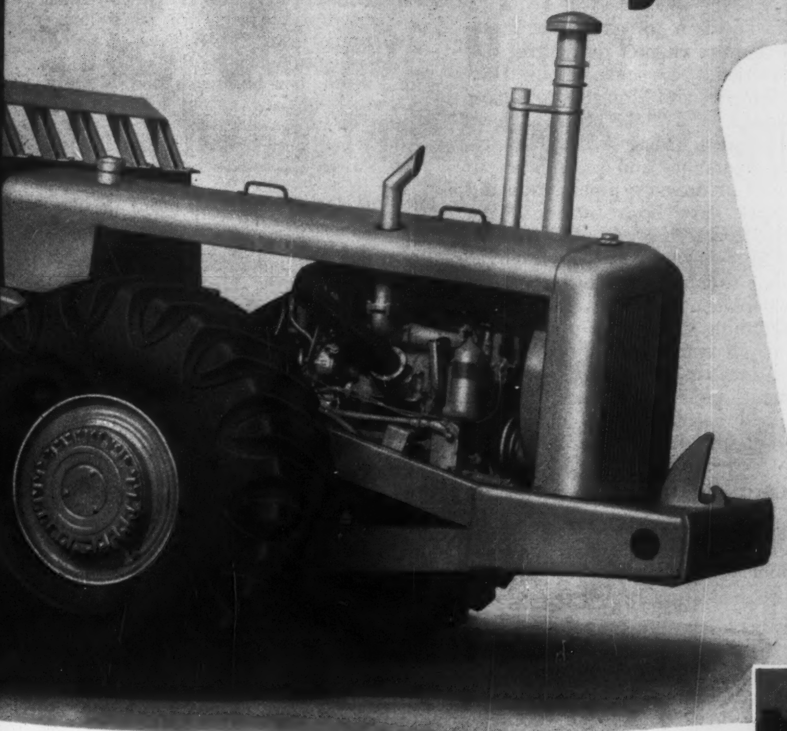
Like the widely used 24 yd. "Twin", this new Euclid has a separate Torqmatic Drive and power train for each axle. It self-loads in practically any scraper material and with a pusher is a big producer on even the toughest jobs. There's plenty of power and traction to pick up a heaped load in a hurry . . . pull out of the cut fast . . . and highball on the haul and return.

The TS-14 works on grades and under adverse job conditions that stall other scrapers. Its ability to do a wide range of work — without pusher assistance — makes it the most versatile scraper in its class. This new "Twin" can lengthen your work season and give you a bidding advantage on that next job. Get the facts and figures from your Euclid dealer.

EUCLID Division of General Motors • Cleveland 17, Ohio

Check the advantages of all-wheel drive in this new 14 yd. Twin-Power scraper!

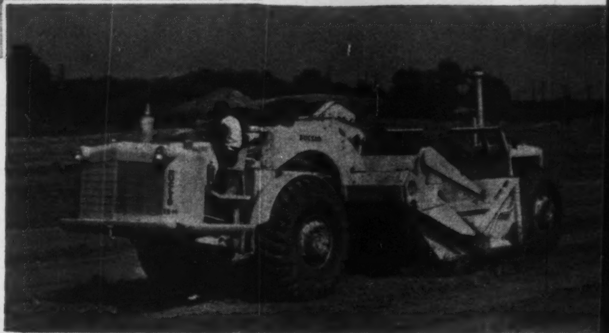
in this 14 yd.* scraper!

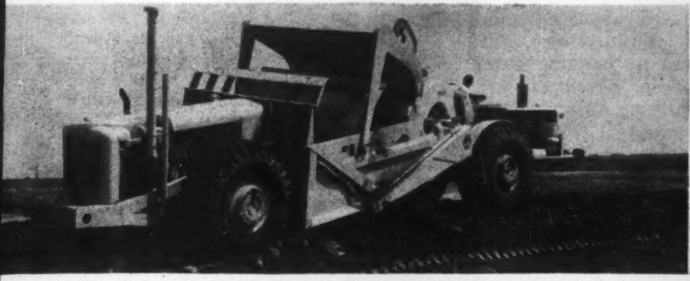


TS-14 features that cut dirt moving costs

2 engines — 296 total h.p.
all-wheel drive
NoSpin differentials
2 Torqmatic Drives
converter lock-up
20 yds. heaped
(14 yds. struck)

All-wheel drive and 296 total horsepower enable the TS-14 to get heaped loads without pusher assistance . . . make it a one-man earthmoving spread with more versatility than any other scraper in its class. Low wide bowl and four-section cutting edge speed loading and cut cycle time . . . blade sections are identical, adjustable and reversible.





The TS-14 works independently of other equipment . . . in the cut and on the fill . . . has the power and traction to self-load fast and work under adverse grade and job conditions that stop single engine scrapers. Its versatility and work-ability make this new "Euc" a top performer for low cost dirt moving on any scraper job . . . big yardage projects as well as close quarter work where concentration of equipment isn't practical.

Separate Torqmatic Drives for each axle provide a smooth, steady flow of power. There's no clutching, no delay, and no loss of momentum when changing to any of the 4 forward speeds . . . speed changes are made by a simple flick of the wrist at the air assist remote control lever. Converter lock-up assures maximum efficiency on grades and long hauls . . . this direct drive provides more usable power from each engine.

GM GENERAL MOTORS

EUCLID

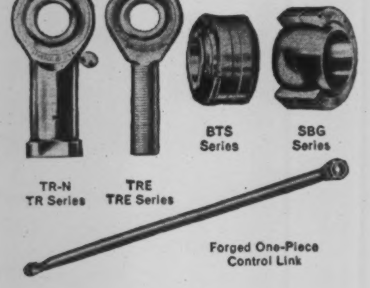
EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

SPHERCO®
BEARINGS

SPHERCO ® USA
AVAILABLE WITH SINTERED BALLS

If you have applications involving linkage or transfer of motion, SPHERCO Bearings can supply your needs in a wide variety of materials with a quality that will give you top performance under normal or high temperature conditions.



WRITE FOR BULLETIN 257

SPHERCO
A PRODUCT OF
SEALMASTER BEARING DIVISION
STEPHENS-ADAMSON MFG. CO.
84 RIDGEWAY AVE. • AURORA, ILL.

the requirements of the new code. (The second edition was published in 1950.)

To make room for additional material, the former chapter on heating has been omitted. New chapters on Hot-Water Supplies and Storage Tanks have been added, and most chapters have been expanded. Many recent applications of hydraulics and pneumatics to the design of drainage pipes, traps and vent pipes have been included. An appendix shows incorrect plumbing installations, followed by a list of corrections that should be made.

The book contains a glossary of about 350 plumbing terms. It presents, in addition, an extensive list of standard specifications of plumbing materials, equipment, pipe and fittings, plus 76 tables and accompanying illustrations giving weights, dimensions and details.

Planner's Guide

SHOPPING TOWNS USA—by Victor Gruen and Larry Smith. 288 pages. Reinhold Publishing Corp., New York, N. Y. $13.50.

This book is a valuable reference tool for all those concerned with the birth of a suburban shopping center—the city planner, real estate developer, financier, merchant, department store executive, architect and engineer.

The authors' themselves leading authorities in the shopping center field, provide a detailed analysis of the many groups that are involved in the development of these giant shopping areas and explain how these groups relate to one another.

Consequently, the book deals not only with planning and design of suburban shopping centers in the U. S. today, but also with such questions as site selection and standards, owners responsibilities, economic considerations, zoning for the site and surrounding areas, relationships between developer and tenant, and financing.

The comprehensive text is enhanced by photographs, drawings and architectural plans.

Contemporary Trends

THE SECOND TREASURY OF CONTEMPORARY HOMES—by the editors of Architectural Record, 232 pages. F. W. Dodge Corp., 119 West 40 St., New York 18, N. Y. $7.75.

A selection of 44 contemporary homes located in every section of the country is described by photos, drawings, plans and brief texts. The homes range from the inexpensive to the luxurious, and illustrate some of the current thinking of architects and builders.

Just Published . . .

PUBLICATIONS (VOL. 19/1959) OF THE INTERNATIONAL ASSOCIATION OF BRIDGE AND STRUCTURAL ENGINEERING—A 268-page volume containing 15 papers (12 in English, one in French and two in German) covering various technical aspects of thin shells, box girders, plate girders and trusses. Verlag Leeman, Zurich, Switzerland. 40 Swiss francs.

Fire Safe Hotels—National Board of Fire Undrewriters, 85 John Street, New York 38, N.Y.

Maintenance Men Look At Housing Design—40-page book. National Association of Housing and Redevelopment officials, 1313 East 16th St., Chicago 37, Ill. $2.50

Task Force Evaluation Report—Small-Sized Nuclear Power Plant Program—U. S. Atomic Energy Commission. 59-page report. United States Department of Commerce, Office of Technical Services, Washington 25, D.C. $1.75

MANUAL OF PHOTOGRAPHIC INTERPRETATION—American Society of Photogrammetry 1515 Massachusetts Ave., N.W., Washington 5, D. C. $10.50.

ROUTE SURVEYS AND DESIGN—by Thomas F. Hickerson. Fourth edition. 568 pages. McGraw-Hill Book Co., Inc., 330 West 42nd St., New York, 36 N. Y. $8.50.

EXAMPLE OF THE DESIGN OF REINFORCED CONCRETE BUILDINGS IN ACCORDANCE WITH THE BRITISH STANDARD CODES—by Chas. E. Reynolds. 265 pages. Concrete Publication Limited, 14 Dartmouth St., Westminster, S.W.1, England. $3.00.

AERIAL PHOTOGRAPHIC INTERPRETATION—by Donald R. Lueder. 462 pages. McGraw-Hill Book Co., Inc., 330 West 42nd St., New York 36, N. Y. $17.50.

HISTORY OF CIVIL ENGINEERING AT IOWA STATE COLLEGE—by Almon H. Fuller. 75 pages. Alumni Achievement Fund, Iowa State University, Ames, Iowa. $3.00.

COVERED BRIDGES OF THE MIDDLE ATLANTIC STATES—by Richard Sanders Allen. 120 pages. Stephen Greene Press, 120 Main St., Brattleboro, Vt. $6.50.

THEORY AND APPLICATION OF MECHANICAL ENGINEERING MEASUREMENTS—by Mark B. Moore. 296 pages. D. Van Nostrand Co., Inc., 120 Alexander St., Princeton, N. J. $6.75.

CATHODIC PROTECTION—by Lindsay M. Applegate. 229 pages. McGraw-Hill Book Co., Inc., 330 West 42nd St., New York 36, N. Y. $9.00.

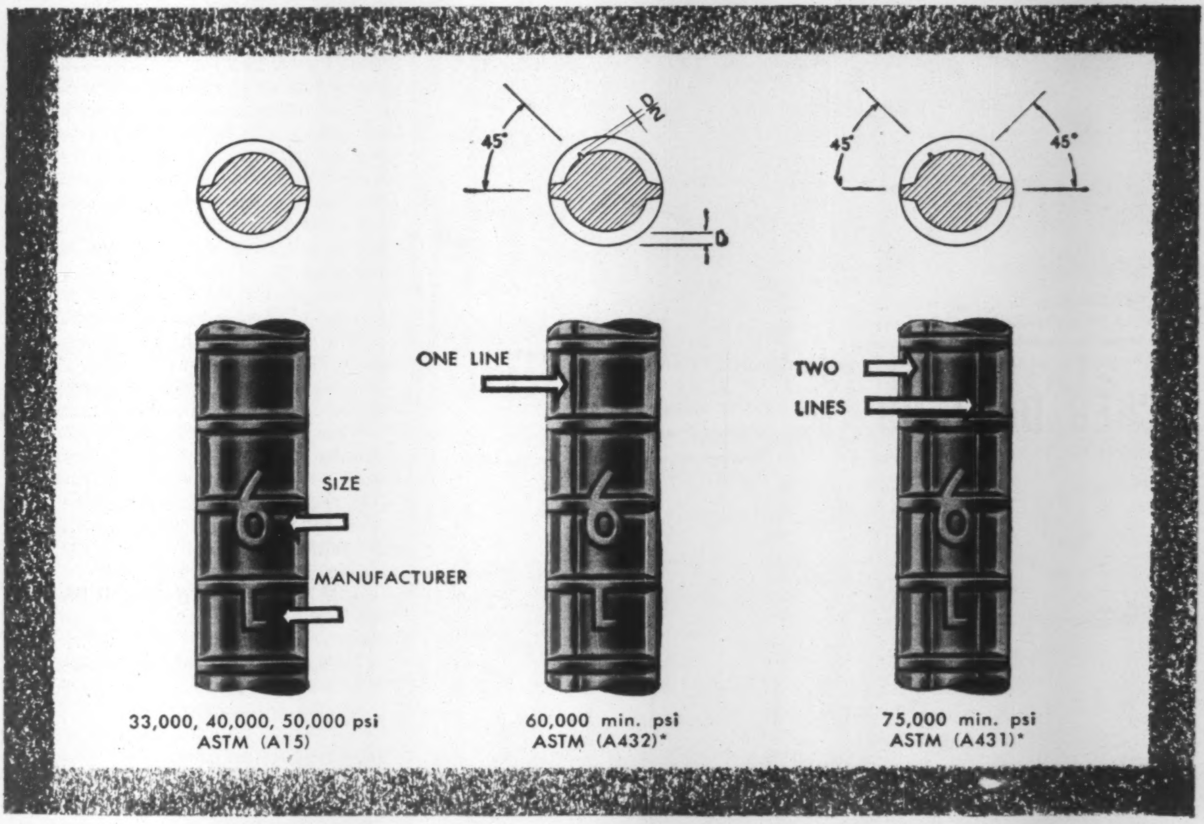
NUCLEAR RADIATION ENGINEERING: An Introduction—by F. W. Hutchinson. 155 pages. The Ronald Press Co., 15 East 26th St., New York 10, N. Y. $6.00.

COMPUTERS AND PEOPLE—by John A. Postley. 246 pages. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $6.00.

INTRODUCTION TO MATRIX ANALYSIS—by Richard Bellman. 328 pages. McGraw-Hill Publishing Co., Inc., 330 West 42nd St., New York 36, N. Y. $10.00.

NOW...

Every LACLEDE Multi-rib Reinforcing Bar is Marked to Show SIZE and STRENGTH...



33,000, 40,000, 50,000 psi
ASTM (A15)

60,000 min. psi
ASTM (A432)*

75,000 min. psi
ASTM (A431)*

Standard high strength steels* permitting greater economy and efficiency in reinforced concrete design under the provisions of the new A.C.I. codes must be **identified.** Recognizing this need, each Laclede Multi-rib reinforcing bar can now be completely identified as to size, strength and origin through a new rolled-in marking system. This assures the designer, contractor, and code writer that the proper grade of reinforcement is used on the job.

Demand these new time-saving Laclede bars for your next construction job.

LACLEDE

LACLEDE STEEL COMPANY

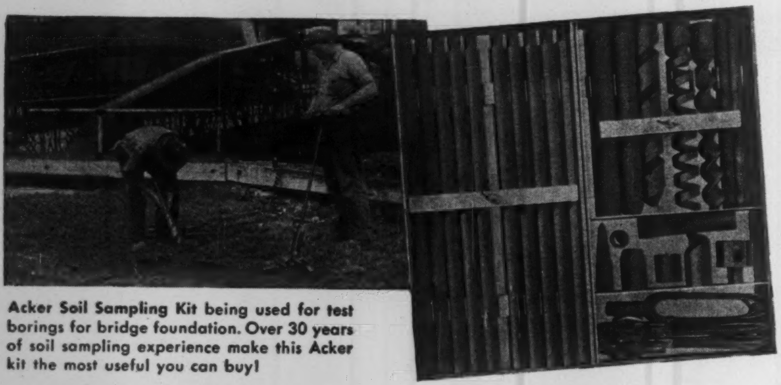
SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

DON'T GUESS!

use an ACKER SOIL SAMPLING KIT for accurate sub-surface information

With accurate sub-soil information, *you avoid* costly trouble later on. And, what better way to get this information than with a portable, easy to use Acker Soil Sampling Kit. For here is a versatile collection of twelve soil sampling tools packed in a handy steel kit that can be carried in any car.

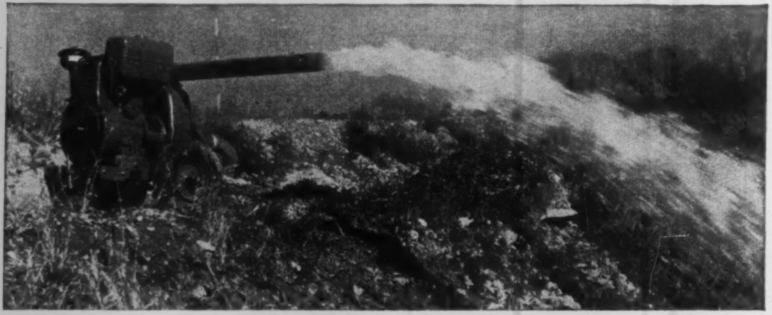
Write today for prices and Bulletin 26ENR.



Acker Soil Sampling Kit being used for test borings for bridge foundation. Over 30 years of soil sampling experience make this Acker kit the most useful you can buy!

ACKER DRILL CO., Inc. 725 W. Lackawanna Avenue
Scranton, Penna.

a complete line of Diamond and Shot Core Drills, Drilling Accessories and Equipment.



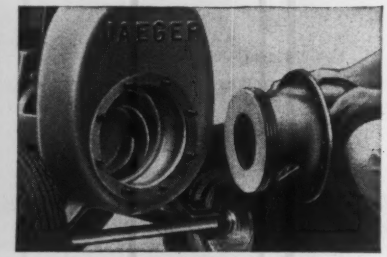
It's Jaeger's new 3" pump . . . the "3PN"

Out-performs all previous models

Pumps all the water a 3" suction hose can handle. With 4" suction hose pumps 28,000 gph at 10' lift. Sure-priming is correspondingly fast, at all practical lifts.

AND LOOK HOW EASY TO MAINTAIN!

Suction chamber and liner are removable for quick adjustment, rotation or replacement of liner plate. (New Model 3XPN offers same feature in a smaller pump.) See your Jaeger distributor or send for catalog.



THE JAEGER MACHINE CO., 200 Dublin Avenue, Columbus 16, Ohio

AIR COMPRESSORS • MIXERS • PAVING, SPREADERS and FINISHERS

Legal

A Contractor Is Liable For Acts of Negligence

A contractor is liable for damages resulting from negligence in the performance of his work. The law requires him to exercise reasonable care.

A discussion of the nature of the liability appears in a Connecticut case in which the owner of a retail clothing store contracted for the installation of a new roof at an agreed price of $2,773.

The owner, in a letter confirming the acceptance of the contractor's bid for performing the job, stated that the work was "to be done in such a manner so that at the completion of each day's work the roof will be tight" and "so as not to interfere with the operation of the store."

The roof, when completed, conformed to the contract specifications.

The contractor, however, was paid only $1,231.11 of the contract price. He brought an action to recover the balance due him under the contract.

The owner of the store counterclaimed that while the work was being performed certain merchandise and the interior ceiling had been damaged by the leakage of rain water and tar through the roof.

The trial court found that the water leakage, which caused most of the damage complained of, had been through the old roof and that the small amount of leakage of tar did not constitute a breach of the contract. The lawsuit, as a result, was not defective.

The court allowed the contractor a recovery for the balance due under the contract, less the sum of $88.85, which it determined was the damage caused by the leakage of tar. This judgment was affirmed on appeal.[1]

The appellate court stated: "There may, of course, be situations where even though there is no breach of a contract, a liability arises because of injury resulting from negligence occurring in the course of the performance of the contract. Dean v. Hershowitz, 119 Conn. 398,409, 177 A. 262, 12 Am. Jur. 1042, section 458. This liability arises from an application of the broad rule that the duty to exercise reasonable care arises whenever the activities of two persons come so in conjunction that the failure by one to exercise that care is likely to cause injury to the other. Borsoi v. Sparico, 141 Conn. 366,370, 106 A. 2d 170."

(1) Hedderman v. Robert Hall of Waterbury, 144 A. 2d 60, Supreme Court of Errors, Conn., July 1, 1958.

Meaning of a Contract Determined by Intent

The principal legal maxim in the construction of contracts is that the intent of the parties, gleaned from the instrument as a whole, should prevail.

The courts have expressed this maxim in a number of ways, as follows:

"The courts have always held that it is not within their province to write or rewrite the provisions of a contract and that the parties are free to make their own contractual arrangements. They have also always held that the provisions of a validly consummated contract will be enforced according to its terms."[1]

"In construing any written instrument, whether it be a will, contract, statute, or constitution, the primary and paramount rule is: *What was the intent or purpose of the makers of such written instrument?* And it is conceded to be the almost universal law that that intent or purpose shall be chiefly gathered from the language employed in such instrument. State ex rel. Maher v. Baker, 88 Ohio St. 165, at page 172, 102 N.E. 732, 734.

"The proper rule in interpreting contracts is to ascertain intention of parties and to give effect to that intention, if it can be done consistently with legal principles. * * * Intention of parties to contract is to be gathered not from particular words and phrases, but from entire language used in agreement, if it can be done. Coe v. Suburban Light & Power Co., 32 Ohio App. 158, 167 N.E. 693."[2]

"The general principle in the construction or interpretation of contracts that the intention of the parties must be gathered from the contents, phraseology, and words of the document itself, unless there is some ambiguity in its language, is too elementary to need citation of authority. Only when the language or words, used in their ordinary sense, are vague, doubtful or have two meanings, may extrinsic evidence be used to determine the intention of the parties."[3]

In doubtful cases, where the contract has been prepared by one party and accepted by the other, the courts will generally resolve the doubts against the party that prepared the contract.

(1) Chicago Great Western Ry. Co. v. Farmers Produce Co., 164 F. Supp. 532.
(2) Wesley v. Electric Auto-Lite Co., 155 N.E. 2d 713.
(3) Coopersmith v. Isherwood, 150 A. 2d 245.

Glen Canyon Bridge Project

utilizes newest methods in

Photos by U.S.
Bureau of
Reclamation

USF leave-in-place
BRIDGE FORMS

A quarter mile in length — 700 feet above the Colorado River — truly a project that challenged every operation. U.S.F. steel forms again proved to be the safe, time-saving, money-saving way of forming the bridge deck. We'll be glad to send you details.

USF

UNITED
STEEL
FABRICATORS, INC.
WOOSTER, OHIO

Highway Guard Rail • Bridge Flooring
Steel Forms for Concrete Bridge Decks
Corrugated Metal Pipe • Window Wells
Metal Doors & Frames • Metal Buildings

Narrow work area creates problems on . . .

Railway Slope Protection Job

Rock riprap and/or gravel blankets will be placed at various locations along a 20-mile stretch of the Wenatchee-Oroville Branch of the Great Northern Railway north of Wenatchee, Wash., for stabilization and erosion protection of the existing 1½:1 to 1:1-in. railroad embankment slopes when they become inundated by the pool formed by the Rocky Reach Hydroelectric Dam.

Stone & Webster Engineering Corp., Boston, is the engineer.

The Chelan County Public Utility District, Wenatchee, Wash., awarded the contract at $1,410,674 to Goodfellow Bros., Inc., Wenatchee, on a low bid 8.8% under the second and 33% under the high of four bids.

The blankets will be placed to an elevation of 5 ft above the maximum pool. Minimum thickness of riprap blankets is 5 in., and of gravel, 3 in.

Usual railroad building equipment will be used, but because of the limited area between the railroad embankment and the Columbia River, difficulties will be encountered in the transportation and handling of materials.

Prevailing wages include: carpenter $3.38; crane & shovel operator (3 yd & under), $3.93; tractor operator $3.56; common labor, $2.80.

Liquidated damages are 50% of the contract cost, and contractor has posted a performance bond.

1C	Goodfellow Bros., Inc., Wenatchee, Wash	$1,410,674
2	Fred H. Slate Co. & E. C. Hall Co., Portland, Ore	1,546,349
4	Morrison-Knudsen Co., Inc., Seattle	2,111,738

Bids: 2-25-60 Items	Unit	Quantity	Unit Prices 1C	 2
Clear & grub	ls	job	$2,000	$30,000
Exc, uncl, incl haul & compact	cy	14,300	0.90	0.85
Riprap	cy	516,000	1.72	1.75
Rockfill, incl compaction	cy	62,000	1.72	1.75
Gravel transition layer	cy	192,000	0.90	1.00
heavy, and boulders	cy	24,000	0.80	0.90
Water	Mgal	40,000	0.01	1.00
Excavation, slope	cy	18,000	1.60	1.00
toe trench	cy	18,300	1.60	1.50
Gravel for RR subgrade & subballast in stockpile	cy	38,000	1.00	1.20
Metal culv pipe for casings,				
6", 16 gage	lf	200	3.00	2.00
8", 16 gage	lf	200	4.00	2.45
12", 14 gage	lf	200	6.00	3.50
Metal culvert pipe,				
6", 16 gage, type 1	lf	27	2.00	2.25
12", 14 gage, type 4	lf	125	6.00	4.25
24", 12 gage, type 4	lf	390	14.50	10.00
36", 12 gage, type 4	lf	620	20.00	15.00
Metal drain pipe, perforated,				
12", 16 gage, type 1	lf	572	4.00	3.75
12", 16 gage TEE	ea	2	50.00	40.00
Structural plate pipe,				
84", 10 gage, type 1	lf	182	60.00	60.00
108", 8 gage, type 1	lf	170	85.00	180.00
Excavation, structure	cy	3,200	4.00	4.00
uncl ditch	cy	3,500	4.00	2.00
Mechanical tamper	hr	530	6.00	7.50
Backfill, impervious	cy	750	4.00	1.00
gravel, for drains	cy	1,100	5.00	4.50
Riprap, hand placed	cy	260	20.00	25.00
Culverts, plug existing,				
class C concrete	cy	50	60.00	100.00
cement sand slurry	cy	1,000	10.00	40.00
50% performance bond	ls	job	7,267	7,942

Commence: 3-15-60. Complete: 12-31-60.

Building Tunnel Averages $897 per Lin Ft.

Over-all cost of connecting the existing Los Angeles State Office Building # 1 by subterranean tunnel to new State Office Building # 2, averages a cost of approximately $897.20 per lin. ft. The California Department of Public Works, Division of Architecture, Sacramento, awarded the contract at $129,232 to Kemper Construction Co., Los Angeles. The lump sum award was 12% under the engineers estimate.

The reinforced concrete tunnel, with a wall thickness of 1 ft 2 in., will be 105 ft long. An open trench will be 39 ft long; total overall length, 144 ft. Low point of tunnel floor will be 28 ft 4 in. below street level. Slope from Office building # 2 to sump pit at station 97.8, minus 0.047 ft/ft; sump pit to Office Building # 1 at station 138.66, is plus 0.056 ft/ft.

Two methods of construction are permitted for the tunnel, both calling for a width of 7.5 ft. The rectangular method will have an average height of approximately 8 ft. The optional segmental arch-method will have an average spring line of 6 ft 6½ in., and radius of 4 ft 2 in.

The tunnel will provide a walkway, and space for racked pipe conduits for steam, condensate return, vacuum, intercomm, etc.

Work includes open excavation; tunneling and tunnel construction; removal and replacement of street and property improvements; mechanical and electrical work; automatic fire sprinklers; metal doors and frames; and other related work and appurtenances.

Prevailing wage rates for tunnel workers include: blaster, driller & powderman, $3.50; miner, hand or machine, $3.50; Kemper and other pneumatic concrete placer operators, $3.50; concrete crew, including rodder & spreader, $3.25. Prevailing wages for other workers include: carpenter, $3.70; electrician, $4.50; general laborer, $2.98.

Work began in February with 200 work days allowed for completion. Liquidated damages are $100/day.

UNDERPINNING & FOUNDATION CO
U&F
EXPERIENCE
is the best teacher

Photo by Buffalo Evening News
MARINE TRUST BLDG., Buffalo
Braced and underpinned 7 story printing bldg. by jacking 86 hercules pipe piles, prior to installation of Marine Trust Bldg. deep pile foundations. John W. Cowper Co., Inc., General Contractors.

FOUNDATIONS
PILING /SHORING
/UNDERPINNING
CONSULTATION & DESIGN

UNDERPINNING &
FOUNDATION CO., INC.
ENGINEERS & CONTRACTORS
SINCE 1909
155 E. 44 St., New York 17, N. Y.
INQUIRIES INVITED. NO OBLIGATION.

ELGOOD
Hydraulic & Mechanical
JACKS
Capacities to
600 Tons—48" Travel

Jacking Equipment for
Pipe Pushing
Erection
Pile Driving
Pile Testing
Slip Forms
Tunnel Shields
Prestressed Concrete
many other

RENTALS — SALES — DESIGN
Large Stock
Immediate Delivery
Write for Job Fact Sheets

ELGOOD EQUIPMENT CORP.
373 Ten Eyck St., Brooklyn, N.Y.
HY 7-5445

PHOENIX BRIDGE
COMPANY
Engineers—Fabricators
Erectors
Structural Steel
BRIDGES and BUILDINGS
General Office
and Shops
PHOENIXVILLE, PA.
Subsidiary—Phoenix Steel Corporation

Materials and Labor Prices Monthly Market Quotations by ENR Field Reporters

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.' truckload del.' per block		CONCRETE Ready Mixed 1:2:4 del. per cy 50 cy & over
	Paper	Bulk	Mortar	Gravel, 1½ In.	Gravel, ¾ In.	Sand	1½ In.	¾ In.	1½ In.	¾ In.	Sand grav.	Lt. wgt. agg.	
Atlanta	$4.38a‡	$3.88a‡	$3.68a‡	$3.10s‡	$3.10s‡	$1.85‡s	$2.18s	$2.33s	$1.65r	$1.75r	$0.175o	$0.21o	$13 75g
Baltimore	4.42a	3.91a	3.56a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	.18a	.18a	13.50ou
Birmingham	4.43c	3.40cf	....	2.53ns	2.53ns	2.13ns	2.75s	2.75s	1.65d	1.75d	.19	.19	14.25q
Boston	5.83ip	4.52ap	4.90imp	3.00qsz	3.00qsz	3.00qsz	1.75qsz	1.85qsz	....	....	.23o	.275ao	15.00q
Chicago	4.52ag	4.02ag	4.15g	3.78‡e	3.78‡be	4.13‡be	3.95‡be	3.95‡be	2.25‡s	2.25‡s	.26‡s	.26‡be	13.50s
Cincinnati	4.84c	4.34c	4.31c	2.29‡cu	2.34‡cu	2.44‡cu	2.51‡cu	2.74‡cu	1.80u	1.80u	.19o	.25ao	15.00qr
Cleveland	1.37‡	....	4.19‡ae	2.25ae	2.25ae	1.75ae	2.80fy	2.80fy	2.20‡f	2.20‡f	....	.23f	17.25u
Dallas	3.65a	3.25a	3.53a	2.65‡a	2.75‡a	1.90‡	2.43	2.63	....	....	....	.27	12.50z
Denver	4.89a	4.39a	4.89	1.95‡	2.15‡	1.42‡b	....	3.00‡x	....	....	.25	.27ao	11.90
Detroit	4.50a	3.89agq	3.97a	4.50‡abm	4.50‡abm	4.25‡abm	3.75‡abm	3.75‡abm	2.53aqaa	2.53aqaa	.24u	.27‡au	15.50eaa
Kansas City	4.52a	3.92a	4.30a	....	....	1.85‡a	2.00‡a	2.00‡a	....	....	.22a	.26c	14.00
Los Angeles#‡	5.12ch	4.68ch	5.60c	2.56‡at	2.76‡at	2.41‡at	2.41‡at	2.46‡at	....	....	.19f	.305	12.46hlz
Minneapolis	4.66a	4.15a	4.25a	2.70‡ae	2.70‡ae	1.60‡ae	3.95‡ae	3.95‡ae	....	....	.20q	....	14.30f
Montreal	3.36‡de†	3.11‡de†	3.72‡de†	1.90‡a†	2.15‡a†	2.40‡a	1.90‡†	2.15‡†	2.00†	2.00†	.20†	.28t†	10.80ek†
New Orleans	4.06b	3.65b	3.85b	2.61b	2.61b	2.16b†	....	....	1.65d	1.75d	.29r	.29	14.00o
New York	4.68a	4.18a	3.75a	....	3.20bk	2.30bkw	2.29blbb	2.29blbb	....	....	.265nwo	.32bwo	17.60ay
Philadelphia	4.49‡ae	3.99‡ae	3.51‡e	1.95‡a	1.95‡a	1.55‡a	2.00‡a	2.30‡a	2.25‡a	2.25‡a	....	.225	13 90z
Pittsburgh	5.65bjk	4.62bj	5.00bjl	2.68‡aqv	2.68‡aqv	3.08‡aqv	2.00‡aqv	2.00‡aqv	2.10w	2.10w	.26rz	.26rz	16.15o
St. Louis##	4.54a	4.04a	4.24a	3.40‡as	3.40‡as	2.40/3.40‡as	1.75js	1.75js	....	....	.255‡o	.315‡co	13.65/14.10q
San Francisco	4.34c	3.79c	4.78c	2.02	2.02	2.12	2.17	2.17	....	....	.24	.28cl	13.00cw
Seattle	4.47‡a	3.75ag	4.65a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm	....	....	.324s	.45cs	14.70j
Toronto	5.20i	3.84t	5.20i	2.40	2.40	2.05	2.40	2.40	2.40	2.40	.26	.275cu	13.75q

‡ Delivered. * Prices incl. dealers discount except as noted. # Add 4% sales tax. ## Add 2% intrastate sales tax. R Revised. † Plus 6% Mun & Prov tax.

CEMENT: •a Less 10¢ disc. 15 days. •b Less 2% disc. 15 days. •c Less 10¢ disc 10 days. •d 10¢ disc. 20 days. •e Truckload lots. •f Fob mill, add $14.58 to $21.31 per car switching charges. •g fob mill + freight. •h LCL. •i Less 2% disc. 10 days. •j Truck lots, fob yard. •k 100 bag lots •l over 150 sacks. •m Sold in bags only. •n Less 5% disc. 30 days. •o Plus 50¢ for Sat. del. •p 5-8 ton truckload. •q F.o.b. mill •s In bags & bbl. Only •t min. 7 tons

SAND, GRAVEL, STONE & SLAG: •a Truck lots. •b Per cu. yd. •c 5 tons up. •d Less 5¢ disc. 10 days. •e Less 2% disc. 10th. •f Less 2% disc. 15th. •g Less 5% for cash. •h Less than 5 tons. •j F.o.b. quarry. •k Barge lots asd. •l F.o.b. scow Hudson river. •m Less 2% for cash. •n F.o.b. cars. •q F.o.b. yard. •r less 5% disc. 15th. •s Less 2% disc. 10 days. •t Less 10¢ disc. 10 days. •u Less 5¢ disc. 10 days. •v Less 2% disc. 15 days. •w Less 10¢ disc. 15 days. •x Incl. 35¢ switch. charge. •y F.o.b. dock. •z 5-8 tons. •aa Less 5% disc. 15 days. •bb Less 2% 25th of month

CONCRETE BLOCK: •a Cinder. •b Waylite. •c Haydite. •d Celocrete, •e 5¼ x 8 x 12 in. •f 8 x 4 x 16. •g F.o.b. truck at job. •l F.o.b. plant San Rafael. •m F.o.b. yard. •n 8 x 8 x 18. •o Less 2% disc. 10 days. •p Less 2% disc. 10th. •q Less 5% disc. 10th. •r Less 2% disc. 15 days. •s Less 2% disc. cash. •t Siporex, 7 x 8 x 18. •u Less 5% disc. 10 days. •v Less 12% disc. 15th.

READY MIXED CONCRETE: •a 6 cu yd or over del. Man. •b 25 cu yds or more. •c 10–100 cy. •d 1–3 mi. zone add 15¢ for ea. add'l 1-mi. zone. •e 3,000 lb comp. •f 2,500 lb. comp., less 5% disc. 30 days. •g Less 25¢ disc. 15 days. •h Less 50¢ for cash. •i 5% off for cash. •j 2% off for cash. •k Federal tax included. Add 6% mun. & prov. tax. •l 1:2½:3½ base price. •m F.o.b. yard. •n Plus escalator clause. •o Less 2% disc. 15 days. •p Less 50¢ disc. 15 days. •q Less 2% disc. 10 days. Add 50¢ per zone. •r 2000 wgt. •s Less 5% disc. 10 days. •t Incl. 50¢ heating. •u Less 2% disc. 15th. •v Sat. del.+50¢. •w 10-100 cy. •x Del in zone 20-B. •y less 25¢, 10 days. •z less 1% in 30 days. •aa 6 bag mix

CURRENT MAXIMUM PRICES AT CEMENT MILLS: Subject to 10¢ discount, 15 days. For paper bags add 50¢ per bbl., not refundable. *Prices guaranteed through December 31, 1960*
• Eff. 1/1/60

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.55	Buffington, Ind	$3.55	Steelton, Minn	$3.60	Muskegon, Mich	$3.60	Toledo, O	$3.45
Clinchfield, Ga	3.55	Independence, Kan	3.35	Leeds, Ala	3.40	Saginaw, Mich	3.60	Milwaukee, Wis	3.50
Kingsport, Tenn	3.55	Hannibal, Mo	3.50	Duluth, Minn	3.45	Wyandotte, Mich	3.60	Green Bay, Wis	3.50
West Des Moines, Iowa	3.60	Northampton, Pa	3.50	Hudson, N. Y.	3.50	Buffalo, N. Y	3.55	Ironton, O	3.55
Nazareth, Pa	3.50	Universal, Pa	3.60	Alpena, Mich	3.50	Oswego, N. Y	3.60	Montreal, Can	2.81
Bath, Pa	3.50	Waco, Tex. (+ 10¢ tax)	3.35	Detroit, Mich	3.60	Cleveland, O	3.65	W. Winfield, Pa	3.60
Lesley, Pa	3.50	Giant, S. C	3.55	Howes Cave, N. Y	3.50	Alsen, N. Y	3.50	Security, Md	3.50

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	e	e	e	$28.70PS	$45.00PS	$0.2740PS	$0.235S	$0.1308wS	$0.245wS	$0.1258S	$0.1328S	$0.245
Baltimore	e	e	e	21.00i	......	.09i	0.18i	.09iwE	.18iwE	.095i	.10i	0.19i
Birmingham	......	66.00i	......	25.12	25.69O	.1069	0.1093O	.1162w	.1188Ow	.1006O	.1069	0.1093O
Boston	......	......	......	22.00apS	46.00apS	22.00avS	46.00avS	.105awF	.22awF	.14aOR	.15OR	......
Chicago	150.00‡a	95.00‡ab	3.95/4.00‡aj	22.00b	32.00b	20.40bv	30.40bv	.10bwH	.18bwH	.08b	......	......
Cincinnati	......	......	......	26.00SU	......	26.00ff	......	.1165wSU	......	.109	.1265	......
Cleveland	......	89.50‡d	6.30	26.00tA	......	26.00tvA	......	.1165twAF	......	......	.1265tA	.21A
Dallas	e	40/80p	e	26.90	46.35	.1138	.1983	30.50	52.45	.1100	.1138	.1983
Denver	......	62.00a	......	......	......	......	......	......	......	......	....	......
Detroit	......	119.00	......	31.50R	......	32.20vR	......	30.24wJR	......	27.84	....	.24
Kansas City	e	e	e	18.00cl	......	18.00cv	......	.0825cwJ	......	.0791c	0.125v	......
Los Angeles#	e	e	e	21.50dmx	......	21.50dvx	......	23.00dKx	......	22.00dvaa	23.90iXv	26.30jXv
Minneapolis	......	......	3.78h	23.70	......	23.70v	......	.125w	......	0.95	.1375bb	......
Montreal	e	e	e	30.50n	43.60n	.167n	.211n	17.80nuE	22.20nuE	.155n	.242n	.27nX
New Orleans	e	e	e	20.00e	......	20.00ev	......	.095ew	......	.085eB	.095eBL	.1905eB
New York	......	......	3.70f	23.99mO	45.94mO	23.99vtO	45.94vtO	10.61uF	20.01uF	......	10.68u	20.11u
Philadelphia	......	......	......	21U	......	21U	......	.095U	......	.095U	......	......
Pittsburgh	60.00k	95.00n	6.35n	31.20is	......	31.20isv	......	.1403‡S	......	.14‡S	.1403i	....
St Louis##	......	......	......	19.74f	21.19	.1825f	.1825	.0890f	.0915fw	0.165f	.1825O	.30R
San Francisco	......	70.00	......	22.50gdd	41.00gdd	22.50gkvdd	41.00gkvdd	22.50gNdd	46.50gNdd	23.25gvWdd	23.50gvXdd	.2023gXdd
Seattle	......	......	......	24.00s	47.00h	33.00vscc	38.50	25.50KE	......	28.75hvY	25.80hvX	49.80hrvX
Toronto	......	139.00f‡	4.50f	38.90	59.01ee	0.2075	0.2773ee	0.222w	0.2704wee	0.233	0.212Zee	.268Zee

‡ Delivered. # Add 4% sales tax. ## Add 2% intrastate sales tax. R Revised.

PAVING BRICK & BLOCK: •a Less 2% disc. 10th. •b 3 x 3¾ x 8. •c 2¼ x 8¼ x 4. •d Truckload lots. •e Not used. •f 2" interior 6 lb tr. •g Less $1/Mdisc. 15th. •h 2" tr, 8 lb. •i 3 x 3⅝ x 8½. •j 2½", 6 lb. tr. •k Used. •l Redshale. •m Pine; oak $6.57. •n Truck del. •o Less $1/M disc. 15 days. •p Used: $40; new: $80.

ASPHALTS: •a F.o.b. refinery, Everett, Mass. •b F.o.b. refinery, Lockport, Ill. •c F.o.b. Sugar Creek, Mo. •d F.o.b. refinery, El Segundo. •e F.o.b. Baton Rouge. •f F.o.b. Hartford, Ill. •g F.o.b. refinery, Richmond, Calif. •h F.o.b. Martinez. •i F.o.b. refinery, Baltimore. •j F.o.b. refinery, Inglewood, Calif. •k 50–110 'penetr. •l Less than 100 penetr. •m 40/300 penetr. •n F.o.b. refinery, Montreal. Fed. tax included; add 6% for mun. & prov. •o Drums not avail. Shipped in steel bbl. •p 60/70 penetr. •r In customer's drums. •s Shipped in drums, per drum. •t 150/300 penetr. •u Per 100 gal. •v Per ton. •w Per gal. •x Also tank trucks •y F.o.b. Oakland. •z F.o.b. Edmonds. •A F.o.b. refinery, Cleveland, •B F.o.b. Destrehan, La. •E RC. •F Also RC. •G Also MS •H RC 0–5 incl. •I MC 4. •J MC, RC $0.095. •K MC 3, 4, & 5. •L MS. •M MC 1–5, RC 1–5, $0.0918. •N MC 3. •O Truckload. •P F.o.b. refinery, Atlanta. •Q F.o.b. Eldorado, Ark. •R Delivered within 50 mi. •S Less 2% disc. 10 days, net 30. •T Less 1% disc. 10 days. •U F.o.b. refinery. •V Less 2% disc. 15 days. •W SC 2. •X RS 1. •Y SC 1. •Z Incl. 10% Sales Tax. •aa SC 3, 4, & 5. •bb RS 3. •cc In used drums. •dd less disc of $1 ton. ee 45 Imp. gal. drums •ff 60-150 penetration

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Mar. 24; Next, Apr. 21.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Mar. 31; Next, Apr. 28.
- Wage Rates, Building Board Insulation: Last, Mar. 31; Next, Apr. 28.
- Iron & Steel Products, Pipe: Last, Mar. 17; Next, Apr. 14.

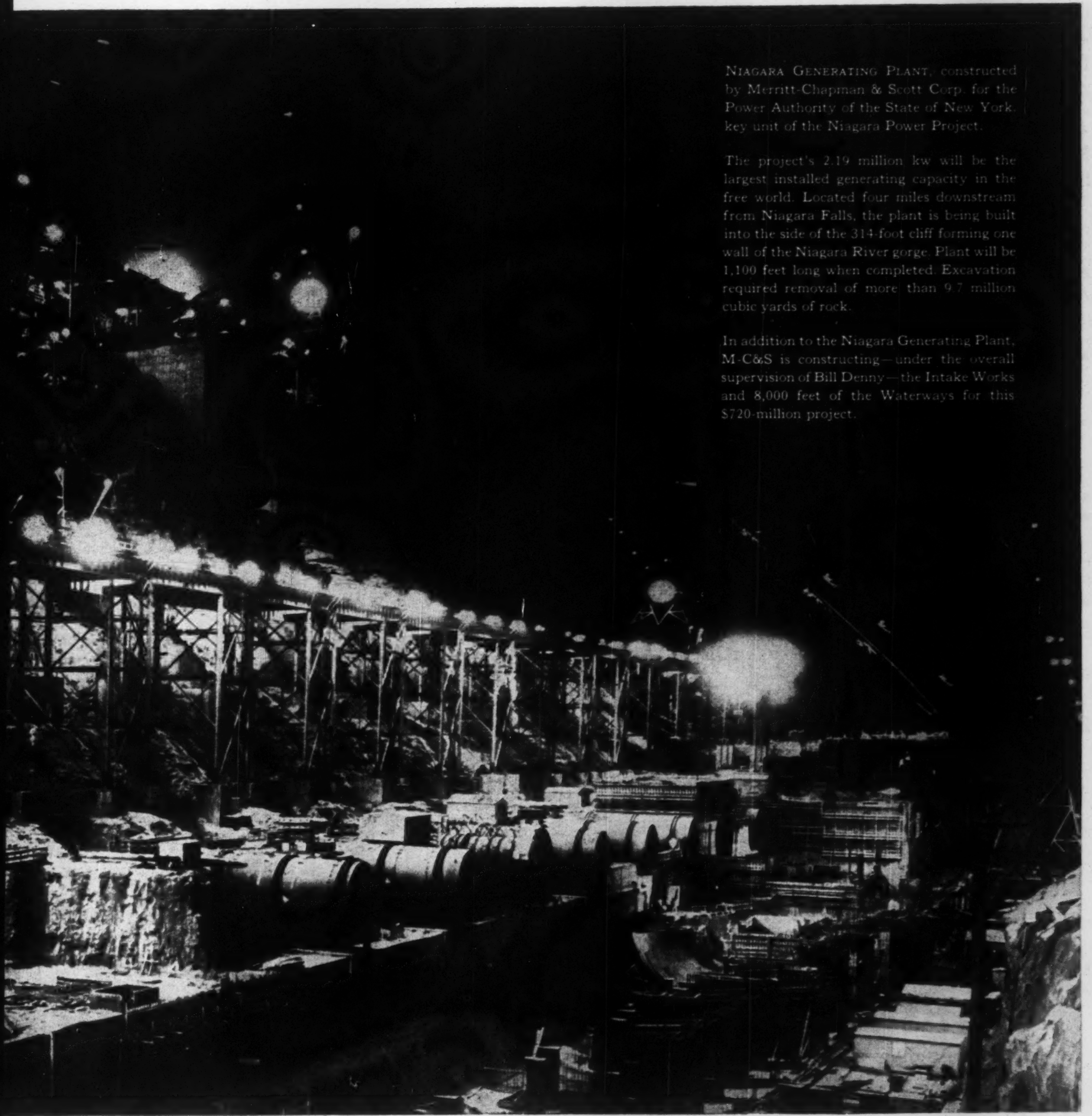
HARD-HITTING, HARD-HATTED, INFORMED, SUCCESSFUL . . .

That's Bill Denny, *Executive V.P. in charge of the Construction Department of Merritt-Chapman & Scott Corp.*

Big ideas need big men—men of knowledge, drive and imagination. Men like William Denny, one-time "construction stiff" who, as head of Merritt-Chapman & Scott's world-wide building and construction operations, has overall responsibility for more than $550,000,000 worth of projects covering every field of construction.

At 58, Bill Denny, known on M-C&S construction jobs from California to Massachusetts, and from Labrador to Australia, has more than 40 years of rugged experience under his belt—33 of them with Merritt-Chapman & Scott, which he joined as a foreman in 1927.

From his home base in New York, Bill Denny currently flies an average of 6,000 miles a month to supervise three widely-separated projects—Glen Canyon Dam in Arizona, Priest Rapids Dam in Washington and the main generating plant of New York's mammoth Niagara Power Project. Bill marshalled the men, equipment and resources to win these three contracts within a period of 22 months—the three biggest competitively-bid construction projects ever



NIAGARA GENERATING PLANT, constructed by Merritt-Chapman & Scott Corp. for the Power Authority of the State of New York, key unit of the Niagara Power Project.

The project's 2.19 million kw will be the largest installed generating capacity in the free world. Located four miles downstream from Niagara Falls, the plant is being built into the side of the 314-foot cliff forming one wall of the Niagara River gorge. Plant will be 1,100 feet long when completed. Excavation required removal of more than 9.7 million cubic yards of rock.

In addition to the Niagara Generating Plant, M-C&S is constructing—under the overall supervision of Bill Denny—the Intake Works and 8,000 feet of the Waterways for this $720-million project.

awarded one company (total value: more than $305,000,000).

Men like Bill Denny—the men under the hard hats who are transforming the face of America with big projects based on big ideas—have to keep abreast of new developments in all phases of construction: engineering, design, financing. These are the men who turn each week—as part of their jobs—to Engineering News-Record for the latest news and information on the machinery, materials, methods, money and manpower they employ in their work. These are the men you reach when you advertise in Engineering News-Record.

Read weekly by all the men who wear construction's hard hat:

Engineers · Architects
Contractors · Owners

ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION
330 WEST 42ND STREET, N.Y. 36

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲ **Massachusetts**—BA 4/18—Commonwealth of Mass., Metropolitan Dist. Comn., Sewerage Div., 20 Somerset St., Boston. Contr. 183, Section No. 135, Westwood Interceptor Sewer, Canton, Westwood and Norwood. $1,000,000. Plans deposit $15. Whitman & Howard, Inc., 89 Broad St., Boston, engr. CD 8/31.

BUILDINGS—BA

▲ **N. H., Durham**—APARTMENTS—BA 4/13—University of New Hampshire, Thompson Hall, faculty and married students apartments, Demerrit Rd. $1,000,000. Extended date. Koehler & Isaak, 1880 Elm St., Manchester, archts. CD 3/14.

▲ **Conn., Fairfield**—MOTEL, etc.—BA 4/14—Barry Bruce Corp., c/o Anderson & Petrofsky, archts., 177 State St., Bridgeport, 47-unit brick veneer, block masonry motel and swimming pool, Black Rock Tpk. $1,000,000. CD 3/9.

▲ **Conn., East Hartford**—SCHOOL—BA 4/26—Town, School Bldg. Comn., Town Hall, Junior High School Wing Junior-Senior High School, Forbes St. $2,000,000. Russell F. Hills, 161 Washington St., Hartford, archt. John P. Legnos Assocs., 30 Gillett St., Hartford, engrs. CD 3/23.

BUILDINGS—SLC

▲ **Conn., Waterbury** — SHOPPING CENTER — Colonial Plaza Corp., 323 Main St., Paterson, N. J., soon lets contract shopping center, W. Main St. $1,600,000. Bernard Hersch, 12-45 Plaza Rd., Fairlawn, N. J., archt. CD 2/26.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW HAMPSHIRE**—Dpt. P. Wks. & Hys., Concord, Bids opened 3/24,

N. H.—**George Brox, Inc.**, 70 Park St., Hudson, Mass., LB **$923,508**, hot b. conc. roadway and 342 ft. deck plate girder bridge 1.317 mi., Salem, Rockingham Co.;

N. H.—**Frank W. Whitcomb Constr. Corp.**, North Walpole, N. H., LB **$208,239**, (5 bidders), plant mixed surf. treatment 40.05 mi. Divisions 4 and 7, Cheshire and Sullivan Counties. CD 3/17.

▲ **R. Zoppo Co.**, 842 Providence Highway, Norwood, Mass., LB **$858,723**, (7 bidders), sewerage system, 2 pumping stations, force mains, GLASTONBURY, CONN. Town, Town Hall, Glastonbury, Conn. Buck & Buck, 650 Main St., Hartford, engrs. Bids Mar. 23. CD 2/26; **A. F. Peaslee, Inc.**, 37 Lewis St., Hartford, Conn., LB **$305,583**, sewage treatment plant (Glastonbury, Conn.).

▲† **Fusco-Amatruda Co.**, 59 Amity Rd., New Haven, Conn., CA **$1,623,700**, enlisted men's barracks, U. S. Naval Submarine Base, GROTON, CONN. Area P. Wks. Office, 3rd Naval Dist., Room 633, 90 Church St., New York, N. Y., Bids Mar. 2. CD 3/4, under LB.

▲ **George A. Fuller Co.**, 597 Madison Ave., New York, N. Y., CA **$5,800,000**, air conditioning 10 story, 32,000 sq. ft. internal court office addn., 700 Main St., HARTFORD, CONN. Travelers Insurance Co., 700 Main St., Hartford, Conn.

BUILDINGS—LB & CA

▲ **City, Dpt. School Bldgs.**, 26 Norman St., Boston, Mass., cancelled bids to have been opened Mar. 24, elementary school, Dwight District, Roxbury, BOSTON, MASS. **$1,000,000**. John M. Gray Co., 153 Milk St., Boston, Mass., archts. Will re-advertise early April. CD 3/2.

▲ **Leonard Rugo, Inc.**, 47 River St., Wellesley, Mass., LB **$1,845,500**, est. $1,750,000, JUNIOR HIGH SCHOOL, River St., BRAINTREE, MASS. Town, Supt. Schools, 10 Tremont St., Braintree, Mass. Bids Mar. 24. CD 3/1.

▲ **C. R. Burns & Son**, 21 Doran Rd., Brookline, Mass., LB **$1,003,000**, est. $1,000,000, ELEMENTARY SCHOOL, Grove St. and Robinson Rd., LEXINGTON, MASS. Town, Supt. Schools, 1557 Mass. Ave., Lexington, Mass. Bids Mar. 24. CD 2/29.

▲ **Green Acres, Inc.**, 99 Wintonbury Ave., Bloomfield, Conn., Owner Builds, **$1,873,950**, 93 HOUSES, Briarcliff, Cherry Park, AVON, CONN.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **N. J., Princeton**—JUNIOR FACULTY HOUSING—BA 4/12—Princeton University, 1st unit 8 story, 37 x 400 ft. Junior Faculty Housing, $1,750,000. Ballard, Todd & Snibbe, 123 E. 77 St., New York, N. Y., archts. Froioli-Blum & Yesselman, 250 E. 43 St., New York, N. Y., engrs. CD 10/26.

▲ **N. Y., Rochester**—HOME FOR AGED—BA 4/13—St. Ann's Home Corp., 50 Chestnut St., 10 story, steel frame with poured concrete slabs for fdn., brick exterior, etc. home for aged. $4,500,000. Plans deposit $100 general, $75 mechanical trades. Barrows, Parks, Morin, Hall & Brennan, 133 East Ave., archts.

▲ **N. Y., Elmont**—SCHOOL, etc.—BA 4/20—Diocese Rockville Centre Bldg. Comn., 253 Sunrise Hy., Rockville Centre, N. Y., St. Vincent De Paul School and Convent. $1,000,000. Anthony J. DePace, 151 W. 46th St., New York 19, N. Y., archt.

▲ **Pa., University Park** — PSYCHOLOGY CENTER — BA 4/20—General State Auth., 18th and Herr Sts., Harrisburg, 2 unit 2 story each connected by 42 ft. parallel enclosed passageway at second story level education and psychology center. $2,370,000. CD 3/15, under LB.

▲ **N. Y., Buffalo**—SCHOOL—BA 4/26—Bd. Educ., 801 City Hall, Zone 2, School 53 addn. $1,300,000. Plans deposit $50 general, $25 mechanical trades. Anthony Carlino, 277 Delaware Ave., archt. CD 3/4.

▲ **N. Y., Oceanside**—SCHOOL, etc.—BA 4/26—Diocese Rockville Centre Bldg. Comn., 253 Sunrise Hy., Rockville Centre, St. Anthony's School and Convent. $1,000,000. J. Sanford Shanley, 152 E. 36th St., New York 16, N. Y., archt.

▲ **N. Y., West New Brighton**—HOUSES—BA 4/28—New York City Housing Auth., 299 Broadway, New York, Zone 7, Proj. NY-5-40, fdns. and general constr., heating and ventilating, electrical work, plumbing, furnishing, installation of elevators for West Brighton Houses, Henderson Ave., Broadway, Castleton Ave. and Alaska St. Plans deposit $75, $25 for installation of elevators. Extended date. CD 2/18.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,

N. Y.—**Bero Constr. Corp.**, Box 70, W. River Rd., Waterloo, N. Y., CA **$1,009,928**, est. $1,231,000, b. conc. Type 2A pavt. 2.32 mi., misc. work 0.03 mi. City of Cortland: Arterial Hy., Tompkins and Fort Watson Sts. Rtes. 11 and 13, FAC 60-4, Proj. U-481 (7), Cortland Co.;

N. Y.—**R. DiAngelo & A. Stento Contractors**, 168 Conklin Ave., Binghamton, N. Y., CA **$630,613**, est. $753,000, b. conc. pavt. 2.44 mi., misc. work 0.01 mi., 3 comp. beam brs. 2 sp. 100 ft., 1 sp. 63.3 ft., 1 sp. 75.0 ft., Canisteo-Whitesville, Pt. 4, SH 8104, Canisteo-Whitesville, Pt. 5, SH 8204, Rte. 248 FARC 60-14, Proj. F-367 (6), Steuben Co.;

N. Y.—**Green Island Contg. Corp.**, 594 Broadway, Watervliet, N. Y., CA **$750,959**, est. $982,000, b. conc. Type 1A, 4.42 mi., prestressed concrete comp. beam br. 76 ft. sp. Delta-Westernville, SH 1141, Rome-Northwestern, Pt. 1, SH 561, Rte. 46, FARC 60-14, Proj. S-327(2), Oneida Co. Grand total $2,391,500. Bids Feb. 18, awarded Mar. 26. CD 2/25, under LB.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

▲ **Bethlehem Steel Co.**, 25 Broadway, New York 4, N. Y., CA **$23,413,900**, Sched. II, Narrows Bridge, Contr. NB-2S, Staten Island Tower, NEW YORK. Triborough Bridge & Tunnel Auth., Administration Bldg., Randall's Island, New York 35, N Y.. Bids Feb. 24. CD 2/29, under LB;
Harris Structural Steel Co., 419 4th Ave., New York 10, N. Y., CA **$22,697,091**, Sched. III, Narrows Bridge Contr. NB-2B, Brooklyn Tower (New York).

▲ **Horn Constr. Co.**, 2174 Hewlett Ave., Merrick, N. Y., CA **$1,937,910**, Throgs Neck Bridge, Contr. No. TN-10E, Bronx and Queens Approaches viaduct roadway slabs, NEW YORK. Triborough Bridge & Tunnel Auth., Administration Bldg., Randall's Island, New York 35, N. Y. Bids Feb. 25. CD 2/29, under LB.

▲ **Tufano Contg. Corp.**, 32-17 Lawrence St., Flushing, N. Y., CA **$1,598,760**, rehabilitation of Runway 4-22 and associated taxiways, paving and utilities, LaGuardia Airport, Contr. LGA-310.009, JACKSON HEIGHTS, N. Y. Port of New York Authority, 111 8th Ave., New York 11, N. Y. Bids Mar. 10. CD 3/16, under LB.

▲† **Gelco Builders & Burjay Constr. Co.**, 413 E. 119th St., New York 35, N. Y., CA **$2,198,552**, installation central air-conditioning, U. S. Post Office and Annex, 33rd St. and 8th Ave. and U. S. Post Office, Morgan Annex, 341 9th Ave., Contr. IFB No. 00806, NEW YORK, N. Y. General Services Admin., 250 Hudson St., New York 13, N. Y. Bids Feb. 19. CD 2/25, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 3/29,

Conduit & Foundation Corp., 158 North 20 St., Phila., Pa., LB **$2,118,501**, (10 bidders), grading, paving 1.387 mi. Interstate Rte. 80, Sect. 2H, from Landing Rd. interchange to Howard Blvd. in Mount Arlington, Roxbury Twp., Morris Co. CD 3/15.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton,

Samuel Braen's Sons, 662 Goffle Rd., Hawthorne, N. J., CA **$1,066,285**, interchanges on Rte. 208 at Summit, Russell, Cedar Hill, and Grandview Aves., boroughs of Franklin Lakes and Hawthorne, Wyckoff Twp., Bergen and Passaic Counties. Bids Mar. 2, awarded Mar. 23. CD 3/4, under LB.

▲ **PENNSYLVANIA**—Dpt. Hys., 506 North Office Bldg., Harrisburg, Bids opened 3/24,

Pa.—**C. J. Langenfelder & Son**, 8427 Pulaski Highway, P.O. Box 5106, Baltimore 24, Md., LB **$4,600,628** (13 bidders), 4-lane divided highway with 60 ft. wide earth divisor, 8 pairs bridges, Interstate Rte. 81, Carlisle By-pass, Cumberland Co.;

Pa.—**John F. Casey Co.**, P.O. Box 1888, Pittsburgh 20, Pa., LB **$9,240,364** (8 bidders), 4-lane divided highway, ramps and service roads, retaining walls, drainage structures, widening existing bridge, 5 pairs bridges, 2 single bridges, 3.6 mi. Rtes. 8 and 28, Sharpsburg By-pass, Allegheny Co.;

Pa.—**Ralph Myers Contg. Corp.**, Box 125, Pitcairn, Pa., LB **$9,240,364** (12 bidders), 6-lane divided highway and 1 bridge 0.93 mi. Interstate Rte. 70, Penn. Twp. and Monroeville, Allegheny Co.;

Pa.—**J. Robert Bazley, Inc.**, P.O. Box 298, Pottsville, Pa., LB **$1,296,915** (13 bidders), blacktop surf. variable in width 7.4 mi. Rte. 83, Berks and Schuylkill Counties;

Pa.—**Central Pennsylvania Quarry Stripping & Constr. Co.**, 270 S. Pine St., Hazleton, Pa., LB **$1,742,549** (5 bidders), 4-lane divided highway, traffic circle 1.94 mi., 3 pairs bridges, Interstate Rte. 81, Penn-Can Highway, North Scranton, Lackawanna Co. CD 3/2.

▲ **PENNSYLVANIA**—Dpt. Hys., 506 North Office Bldg., Harrisburg, Bids opened 3/24;

Charles A. Imel & Son, 200 Grand Ave., Clarion, Pa. LB **$1,158,787** (7 bidders), 2-lane Allegheny River Bridge, I-beam and continuous deck plate girder construction, Rte. 36 and 62, at Tionesta, 0.94 mi., Forest Co. CD 3/2.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, Bids opened 3/25,

Pa.—**Adam Edmiller, Inc.**, R.D. 4, Greensburg, Pa., LB **$3,475,964** (10 bidders), 11,718 ft. rein.-con. divided highway variable in width, 8 bridges, Interstate Rte. 70, T.R. 22, Monroeville Boro, Allegheny Co.;

Pa., **Central Pa. Quarry Stripping & Constr. Co.**, 270 S. Pine St., Hazleton, Pa., and **Stabler Constr. Co.**, 635 Lucknow Lane, Harrisburg, Pa., LB **$3,792,901** (7 bidders), 17,003 ft. separated highways cr. aggregate base with bit. surf. 24 ft. wide, 8 bridges, Interstate Rte. 81 A, sec. Pen-Can Highway, incl. interchange with Anthracite Expressway, Dunmore Boro, Lackawanna Co. CD 3/8.

▲ **PENNSYLVANIA**—State Rd. Dpt., 506 North Office Bldg., Harrisburg,

Pa.—**Fred W. Ewing, Inc.**, 405 W. Main St., Corry, Pa., CA **$588,352**, 24,620 ft. cr. aggregate base with bit.

(Continued on page 86)

FROM THE GROUND UP...
HEAVY DUTY ESSO LUBES FIT YOUR JOB

Multi-purpose Grease H keeps parts moving easily in all types of construction equipment ... parts such as spring shackles, wheel bearings, steering linkages, track rollers. Protects from heat, dirt and water. Cuts down inventory by replacing 3 or more special-purpose greases.

Essolube® HDX crankcase oil proves top-notch for minimizing deposits in heavy duty engines... gasoline or diesel... high or low temperature. It has exceptional oxidation stability, reduces wear on heavily loaded parts.

Nator® Gear Oil, a multi-purpose EP oil giving heavy duty service in transmissions and final drives except worm gear types. For worm gears, Pen-O-Led®EP oil prevents excessive wear from sliding friction.

Surett® N lubricates open gears and wire rope 2 to 4 times longer than ordinary gear shields! Exceptional adhesive and "stringing" properties keep Surett N on wearing surfaces—even when exposed to heavy loading, dust, water, heat.

For specifics on how you can benefit most with Esso lubricants, contact your local Esso office or write: Esso Standard, Division of Humble Oil & Refining Company, 15 West 51st St., N. Y. 19, N. Y.

Esso

In Industry after industry..."ESSO RESEARCH works wonders with oil"

surf. 20 ft. wide, 1 alternate superstructure bridge, L.R. 42010 (4), Bradford Twp., McKean Co.;

Pa.—**A. E. Oblock, Unity,** Pittsburgh 35, Pa., CA **$989,260,** 34,253 ft. cr. aggregate base highway with bit. surf. 18 ft. wide, 2 bridges, T.R. 949, Ridgway and Spring Creek Twps., Elk Co. Bids Mar. 11. CD 3/15, under LB.

▲ **MARYLAND**—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 3, Bids opened 3/29,

Md.—**S. J. Groves & Sons,** Camp Hill, Pa., LB **$2,142,282,** (9 bidders), grade, drain, surf. 3.59 mi. US 40 from top of Martin Mountain, westerly, A-464-2-620, Allegany Co.,

Md.—**Eugene Chaney,** Upper Marlboro, Md., LB **$1,151,621,** (9 bidders), grading, paving, surf. 5.6 mi. Rte. 416 incl. 4 span steel beam bridge near Waysons Corner, AA 498-1-520-AA 497-4-520, AA-498-3-520 and C-228-1-520, Anne Arundel and Calvert Counties. CD 3/15.

▲ **C. J. Langenfelder & Son,** 8427 Pulaski Hy., Baltimore 21, Md., CA **$3,240,439** on alternates, Jones Falls Expressway, 29th St. to Union Ave. incl. section of Keswick Rd. Bridge, BALTIMORE, MD. City, Bureau Hys., 303 Municipal Bldg., Baltimore 2, Md. Bids Feb. 24. CD 2/26, under LB.

BUILDINGS—LB & CA

▲ **N. K. Winston-Muss Co.,** 22 W 48th St, New York, N Y, CA Est **$12,000,000,** Walt Whitman SHOPPING CENTER, 54 STORES, incl 2 story, bsmnt. DEPARTMENT STORE for Abraham & Straus, Jericho Turnpike and Rte. 110, HUNTINGTON, N. Y. Norman K. Winston & David Muss, 22 W. 48th St., New York, N. Y. Welton Becket, 5667 Wilshire Blvd., Los Angeles 36, Calif., archt. CD 8/29/56.

▲ **Blitman Constr. Corp.,** 101 Park Ave., New York, N. Y., CA Est. **$3,500,000,** six 2 story APARTMENTS, Fire Island, opposite SAYVILLE, N. Y. Island Pines Apartments, c/o Bertram Lee Winston, archt., 832 Bedford St., Stamford, Conn.

▲ **Wark & Co.,** 1920 Sansom St., Phila., Pa., CA **$4,000,000,** OFFICE and LABORATORY BLDG., CENTER SQUARE, PA. Remington Rand Univac Division Sperry Rand Corp., 19 and Allegheny Ave., Phila. Pa. Bids Mar. 16. CD 3/8.

▲ **Whiting-Turner Contg. Co.,** 6229 Charles St., Baltimore, Md., CA boiler house, incinerator bldg., tank farm and pump house and fdn. for SUPER PROCESS BLDG., BALTIMORE, MD. Chevrolet Div. of General Motors, 5044 W. Grand Blvd., Detroit, Mich. Albert Kahn Associated Architects & Engineers, Inc., New Center Bldg., Detroit, Mich., archt.-engr. CD 7/17.

▲ **Land & Development Co.,** 7705 Georgia Ave. N. W., Wash., D. C., Owner Builds, **$4,500,000,** APARTMENT PROJECT, Riverdale Rd. and Baltimore-Washington Expressway, RIVERDALE, MD. Morton W. Noble, 2000 P St. N. W., Wash., D. C., archt.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲ **Oleans Levee Dist.,** Royal and Conti Sts., New Orleans, La., rejected bids Mar. 4, 2,800,000 cu. yd. hydraulic fill in Lake Pontchartrain, NEW ORLEANS, LA. LB **$2,091,320.** Will re-advertise. CD 3/14, under LB.

▲ **NORTH CAROLINA**—State Hy. Comn., Raleigh, Bids opened 3/29,

N. C.—**Asheville Contg. Co.,** London Rd., Biltmore, N. C. and **Davie Contractors, Inc.,** Mocksville, N. C., LB **$846,484,** CABC, BST, b. conc. binder and surf. 8.66 mi. relocating US 421 from point on US 601 approx. 1.07 mi. south of Yadkinville, easterly to point approx. 3,000 ft. west of Forsyth Co. Line and connection to existing US 421 at End of Project, Proj. 8.17942 8.28556, SF 172(107) S-1301(1) Yadkin Co.;

N. C.—**C. C. Mangum, Inc.,** 3016 Hillsboro St., Raleigh, N. C. LB **$792,394,** grading 7.37 mi. Interstate Rte. 95 from point just south of US Rte. 158, north to Virginia State Line, Proj. 811709, I-955-3 (3)174, Halifax and Northampton Counties;

N. C.—**William B. Dillard Constr. Co.,** Sylva, N. C., LB **$516,713,** CABC, b. conc. binder, surf. and structures 2.335 mi. relocating NC 273 from Catawba St., Belmont, north to point on NC 273 near Mt. Holly, Proj. 8.16303, US 1224(2) S-1224(1), Gaston Co.;

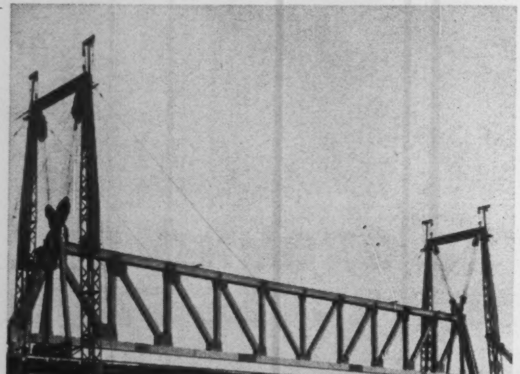
N. C.—**C. G. Tate Constr. Co.,** Hy. 29 N., Concord, N. C., and **Midstate Contractors, Inc.,** Hickory, N. C., LB **$1,697,551,** fine grading SABC, b. conc. binder and surf. 9.14 mi. surf. Interstate Rte. 85 between South Carolina State Line and point south of Kings Mt., Proj. 8.18267, I-85-1(110), Cleveland and Gaston Counties;

▲ **FLORIDA**—State Rd. Dpt., Room 228, Holland Bldg., Tallahassee, Bids opened 3/29,

Fla.—**Hubbard Constr. Co.,** Box 7217, Orlando, Fla., LB **$197,661,** (10 bidders), 6½ in. limerock base Type II b. conc. surf. course 5.564 mi. SR S-478, Fed. Aid Projs. Nos. S-345 (2) and S-523 (1), Jobs Nos. 18520-3601 and 18520-3602, Sumter Co.; LB **$1,956,564,** (19 bidders), 4-lane divided facility 10½ in. limerock base, Type I, b. conc. surf. course with binder course and surf. tr. 7.146 mi. SR 500, State Proj. Jobs Nos. 75020-3109 and 11010-3111, Orange and Lake Counties;

Fla.—**Ewell Engineering & Constr. Co.,** Lakeland, Fla., LB **$1,303,489,** (6 bidders), 4-lane divided, 8½ in. limerock base Type 1-B surf. tr., binder course and Type I b. conc. surf. course 2-lane roadway, Type 1 b. conc. surf. course leveling course and binder course, 8.095 mi. SR 600, State Proj. Job No. 16020-3113, Polk Co.;

A NEW BRIDGE BETWEEN TRAINS



Union Pacific Railroad faced the job of replacing a mainline bridge without disrupting traffic. Maximum time between scheduled trains was only four hours.

P. C. & R. planning and equipment set each 247 foot, 250 ton truss between trains considerably reducing the hazard and expense of erecting a bridge in the conventional manner.

Pacific
CRANE & RIGGING CO.
MECHANICAL CONSTRUCTORS

6855 E. Rosecrans Ave., Paramount, Calif., NEvada 6-9213

BUILDINGS—LB & CA

▲ **John McShain, Inc.,** 3501 Sinclair Lane, Baltimore, Md., CA **$4,384,000,** 4 APARTMENT BLDGS. and 2 RESIDENCE HALL addns. at West Virginia University, MORGANTOWN, W. VA. West Virginia Bd. Governors, Morgantown, W. Va. Bids Mar. 22. CD 2/10.

▲† **Paul Tishman Co., Inc.,** 21 East 70 St., New York, N. Y., CA **$2,914,987,** ACADEMIC BLDG., Armed Forces Staff College, Naval Base, NBy 2456, Spec. 2456/59, NORFOLK, VA. Dist. P. Wks. Office, 5th Naval Dist., U. S. Naval Station, Norfolk, Va. Bids Mar. 15, awarded Mar. 24. CD 3/17, under LB.

▲† **Federal Prison Industries, Inc.,** First and Indiana Aves. N. W., Wash., D. C., Own Forces, **$2,500,000,** 180,000 sq. ft. TEXTILE MFG. PLANT, Federal Penitentiary, ATLANTA, GA. CD 1/26.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ O., **Toledo**—DOCKFRONT—BA 4/19—Toledo-Lucas Co. Port Auth., 241 Superior St., lengthening dockfront from 800 ft. to 2,500 ft. $2,700,000. Parsons, Brinckerhoff, Quade & Douglas, 165 Broadway, New York 6, N. Y., engrs. CD 1/22.

BUILDINGS—BA

▲ O., **Lebanon**—CORRECTIONAL INSTITUTION—BA 4/26—Dpt. P. Wks., State Depts. Bldg., Columbus, Zone 15, Phase III Lebanon Correctional Institution, for Dept. Mental Hygiene & Correction, $5,000,000. Plans deposit $100 for general contract, $20 for mechanical contract. Bellman, Gillett & Richards, 1600 Madison Ave., Toledo, Zone 2, archts. CD 8/6.

HEAVY CONSTRUCTION—LB & CA

▲ **Foley Bros., Inc.,** New York Bldg., St. Paul, Minn., LB **$5,584,334,** 3,300,000 bu. grain elevator, TOLEDO, O. Toledo Lucas County Port Authority, 241 Superior St., Toledo 4, O. Bids Mar. 28. CD 2/10.

BUILDINGS—LB & CA

▲ **Imperial Homes, Inc.,** Junefield Dr., Greenhills, O. Own Forces, **$3,705,910,** 218 brick, bsmntless HOUSES, Chesterdale Rd., CINCINNATI, O. J. S. Wald & Assocs., North Bend Rd., Cincinnati, O., engrs.

▲ **Myers Y. Cooper Co.,** 2652 Erie Ave., Cincinnati, O., Own Forces, **$5,000,000,** 142 HOMES, Asbury and Woodruff Rds., CINCINNATI, O. Nunlist & Frolicher, Tri-State Bldg., Cincinnati, O., engrs.

▲ **Prestige Homes, Inc.,** c/o Floyd Putnam, 643 E. Lorain Rd., Oberlin, O., Owner Builds, **$4,000,000,** 264 HOMES, Rte. 10, E. College St., Willowbrook Farms, OBERLIN, O. CD 2/12.

▲ **R. S. Ursprung Co.,** Hanna Bldg. Annex, Cleveland 15, O. LB **$2,250,000** (5 bidders), St. Anthony of Padua HIGH SCHOOL; LB **$750,000** (5 bidders), St. Anthony of Padua ELEMENTARY SCHOOL, PARMA, O. Catholic Diocese of Cleveland, 1027 Superior Ave., Cleveland 14, O. Bids Mar. 22. CD 3/22.

▲ **Gilbane Constr. Co.,** 90 Calverly St., Providence, R. I. CA Est. **$2,500,000,** CLASSROOM, LIBRARY AND MONASTERY, STEUBENVILLE, O. Steubenville College, Steubenville, O. Awarded Mar. 7. CD 10/9.

▲ **Crane Constr. Co.,** 201 E. Walton St., Chicago 11, Ill., CA **$2,000,000,** 21 story APARTMENT, corner Chestnut and DeWitt Sts., CHICAGO, ILL. Ray Sher, 201 E. Walton St., Chicago 11, Ill. Hirschfeld & Pawlan, 327 S. LaSalle St., Chicago 4, Ill., archts CD 9/4/52.

▲ **John C. Long, Inc.,** 600 W. Jackson Blvd., Chicago 6, Ill., CA **$2,875,000,** 2 story, 132 x 403 ft. and 68 x 133 ft. BARRACKS, Buckley Rd. near Green Bay Rd., GREAT LAKES, ILL. Dist. P. Wks. Office, Bldg. 1-A, Great Lakes, Ill. Bids Mar. 9. CD 3/22, under LB.

▲ **Great Western Contg. Co.,** 33 N. Wabash Ave., Chicago 2, Ill., CA **$2,000,000,** part 1 and 2 story RESIDENCE HALL, CLASSROOMS, GYMNASIUM, LAKE FOREST, ILL. Barat College, 700 E. Westleigh Rd., Lake Forest, Ill. Loebl, Schlossman & Bennett, 333 N. Michigan Ave., Chicago 1, Ill., archts. Awarded Mar. 25. CD 3/21/58.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† Kansas—BA 4/19—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., levees, channels, pumping plants and appurtenances for Marais des Cygnes River and Wilson Creek, Stage II, near Ottawa, CIVENG-23-028-60-87. $2,500,000. Plans deposit $40. CD 3/16.

BUILDINGS—BA

▲ Minn., **Hutchinson**—SCHOOL—BA 4/20—Bd. Educ. Independent School Dist. No. 423, constr. high school. $2,000,000. Bissell & Belair, 1111 Nicollet Ave., Minneapolis, archts. CD 10/14.

▲† **Tex., Fort Hood**—HOUSING UNITS—BA About 4/27—U. S. Eng., Box 1229, Galveston, 800 unit Capehart housing, ENG-41-243-60-25. Over $10,000,000. CD 9/2.

▲ Tex., **Houston**—HOSPITAL—BA 4/27—City of Houston, City Hall, and Harris County, Courthouse, Houston, City-County Charity Hospital, in Medical Center, $9,200,000. Finn, Maddox & Johnson, 1055 Banker Mortgage Bldg., and 3501 Buffalo Dr., archts. Rob. J.

Cummins, Bankers Mortgage Bldg., and **Reginald F. Taylor**, 5009 Caroline St., engrs. CD 3/4.

▲ **Tex., Orange**—PLANT—Bids Asked—Firestone Tire & Rubber Co., 1200 Firestone Parkway., Akron, O., synthetic Rubber manufacturing plant, near here $8,000,000, CD 2/2/59.

BUILDINGS—LB & CA

▲ **Borchman Sons Co.,** 4601 Douglas St., Omaha, Neb., LB **$1,758,857** (5 bidders), general contract 4 story HOSPITAL, COUNCIL BLUFFS, IOWA. Jennie Edmundson Memorial Hospital Bd., Oak and Pierce Sts., Council Bluffs, Iowa. Bids Mar. 17. CD 3/15;
J. J. Hanighen Co., 945 N. 20 St., Council Bluffs, Iowa, LB **$1,046,355** (3 bidders), mechanical contract for hospital (Council Bluffs, Iowa).

▲ **Conner Bros. Constr. Co.,** 615 E. Washington St., Sigourney, Iowa, CA Est. **$3,000,000,** with equipment, 1 story, 50,000 sq. ft. universal joints and automotive farm and road equipment parts PLANT, 5,000 sq. ft. OFFICE area, FAIRFIELD, IOWA. Rockwell-Standard Corp., 843 4th Ave., Coraopolis, Pa. CD 1/22.

▲ **MacDonald Constr. Co.,** 1310 S. Grand Blvd., St. Louis 4, Mo., CA **$2,874,600** (11 bidders), 5 levels, 218 x 218 ft. (two levels below grade), stone, masonry blocks, glass, concrete, steel, etc., John Olin LIBRARY, ST. LOUIS, MO. Washington University, Lindell and Skinker Blvds., St. Louis 30, Mo. Bids Mar. 17. CD 2/24.

▲ **Lake Air Development Co., Arthur Temple, Jr.,** Diboll, **and Chas. L. Sligh, Lumberman, Developer,** Waco, Tex., Owners Build, **$2,600,000,** SHOPPING CENTER; **$65,000,** site earthwork; **$106,400,** hard-paved area and auto center, WACO, TEX. Grand total $2,771,400. CD 12/3/59.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **Oregon and Washington**—BA 4/22—U. S. Eng., Pittock Block, Portland, Ore., repair south jetty at mouth of Columbia River, CIVENG-35-026-60-160, $2,000,000. Plans deposit $1. CD 10/1.

▲ **Ore., Eugene**—BA About 5/27—Eugene Water & Electric Bd., City Hall, Carmen Smith Hydro Electric Project, Total est. $25,000,000. Cornell, Howland, Hayes & Merryfield, Corvallis, 1600 Western Ave., Corvallis, Ore., consult. engrs. Bechtel Corp., 612 S. Flower St., Los Angeles, Calif., engrs CD 12/11.

HEAVY CONSTRUCTION—LB & CA

▲† **Manson-Osberg Constr. Co.,** 1132 N. 128th St., Seattle 33, Wash., CA **$3,216,420** communication facilities at Duncan Canal Air Force Station, Inv. 60-29, ALASKA. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. Bids Mar. 15, CD 3/17, under LB;
Gaasland Co., Inc., 1155 Ellis, Bellingham, Wash., CA **$1,105,392** communication facilities at Smugglers Cove Air Force Station, Inv. 60-29 (Alaska.).

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento, Bids opened 3/30,
Gordon H. Ball & Gordon H. Ball, Inc., 300 Camille Ave., Danville, Calif., LB **$3,812,194,** (9 bidders), 4.4 mi. 6 and 8 lane freeway between Sign Rte. 12 near Cordelia and 0.3 mi. east of Chadbourne Rd. west of Fairfield on US Hy. 40 and 1 mi. 4 lane divided hy. on Sign Rte. 21 from US 40 to Cordelia incl. 10 bridges. X-SOL-7, 74, H, B, C, Solano Co. CD 2/17.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,
Griffith Co., 106 South Broadway, Los Angeles, Calif., CA **$8,737,889,** constr. 1.1 mi. 8 lane freeway viaduct on Santa Monica Freeway, combination rein.-con. and structural steel (portions) between 8th St. and Hooper Ave., Los Angeles, VII-L.A.-173-LAJV, Los Angeles Co. Bids Mar. 10. CD 3/16, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,
Guy F. Atkinson Co., 10 West Orange Ave., South San Francisco, Calif., CA **$4,109,789,** grading, paving 2.1 mi. eight lane MacArthur Freeway US 50 between San Pablo and Grand Ave. in Oakland, incl. fill for elevated freeway section, six crossing or interchange structures, nineteen retaining walls, IV-ALA-50ak, Alameda Co. Bids Mar. 16. CD 3/18, under LB.

BUILDINGS—LB & CA

▲† **Raber-Kef, Inc., and B-E-C-K Constructors,** 3647 Stone Way, Seattle 3, Wash., CA **$3,853,000,** electronic aids to navigation station at St. Paul and Attu Islands and monitor facilities on Adak Island, Inv. 17-18-60, ALASKA. P. Wks. Office, 17th Coast Guard Dist., Box 2631, Juneau, Alaska. Bids Mar. 8. CD 3/14, under LB;
American Service, Inc., Box 915, Anchorage, Alaska, CA **$1,597,000,** navigation-aid station at Sitkinak (Alaska).

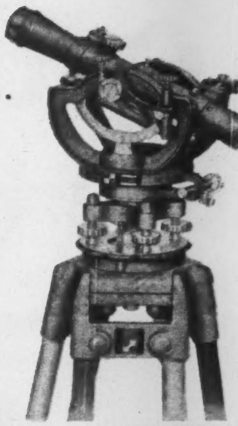
▲ **Marvin E. Collins Co.,** 5635 San Diego St., El Cerrito, Calif., CA **$7,000,000,** SHOPPING CENTER, on 40 acre site to incl. Professional Bldg., Fraternal Bldg., Apartments, Bowling Alley, Recreation Center, ANTIOCH, CALIF. Delta Fair, Antioch, Calif. CD 12/8.

▲ **Johnson, Drake & Piper** and **M. J. Brock & Sons,** 10642 Downey Ave., Downey, Calif. (joint venture), LB **$13,750,000,** (7 bidders), BARRINGTON PLAZA, LOS ANGELES, CALIF. B. C. Deane Co., c/o Daniel, Mann, Johnson & Mendenhall, archts.-engrs., 3325 Wilshire Blvd., Los Angeles, Calif. Bids Mar. 25. CD 3/18.

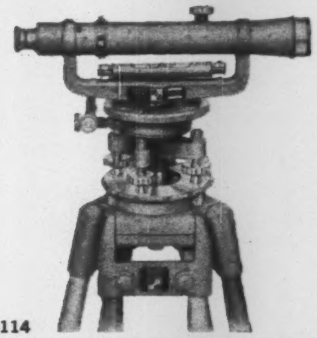
(Continued on page 91)

after your first-order survey...

take rugged, reliable
DAVID WHITE
SURVEYING
INSTRUMENTS
into the FIELD!



T8300
More builders use the David White Universal than any other transit! Soon pays for itself in aligning piers, plumbing walls and uprights, general highway construction, obtaining angles and checking every stage of construction from the ground up. The T8300 Universal stays on the job, assures unfailing accuracy. With tripod $222.50



T8114
Builders and contractors find this 12-inch level indispensable for measuring elevations, laying out foundations, running lines, and grading. Used by more builders than any other level. With tripod $173.50

for day-to-day instrumentation
for specification checks

SENSITIVE AND ACCURATE
12-inch telescopes — 26x magnification — internal rack-and-pinion focusing — coated optics — machine divided graduations on all circles and verniers — 120-second level vial — accurate readings to 5 minutes — rolled threads on all clamp and tangent screws — wide, flat field of view — torque-free, European-type aluminum tripod.

RUGGED
Permanently lubricated double ball bearing race center — heavy zinc alloy, one-piece standards — covered leveling screws.

Prices may be slightly higher west of the Rockies.

DAVID WHITE
INSTRUMENTS
A Division of Realist, Inc. Menomonee Falls, Wisconsin

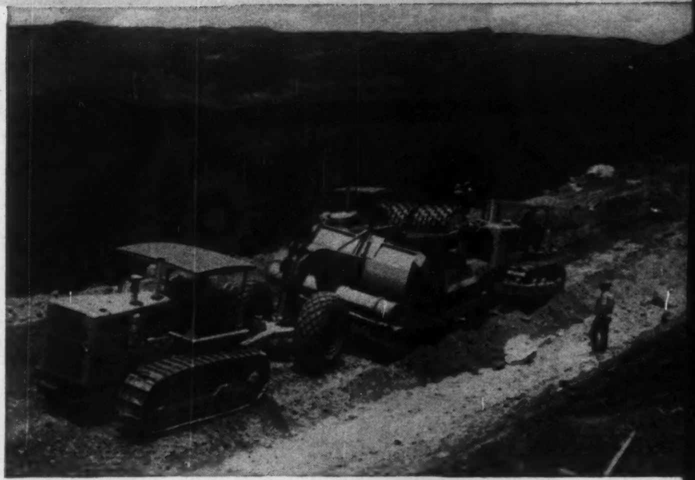
HANDLE THAT WET JOB PROFITABLY

MORETRENCH WELLPOINT SYSTEM
Results Guaranteed

Send for Catalog
MORETRENCH CORPORATION
World's Oldest, Largest and Most Experienced Predrainage Organization
Main Office & Plant: **Rockaway, N. J.**
Chicago, Ill., Tampa, Fla., Houston, Tex., Hackensack, N. J.

Cat crawler-drawn short work of mean

Scrapers make mountain hauls



A canal across a mountain! That's the job this contractor's doing in Colorado. Brannon Construction Co. is building an irrigation canal from Vega Dam near Collbran to agricultural areas 18 miles away. To make the mountain job even tougher the canal path is mostly rock. Hauls are short—1000 feet maximum. There's little room for turning.

Brannon Construction got set for the job with a spread of three Caterpillar D8 Tractors, two No. 90 Scrapers, a D9 and a D7. A Cat No. 12 Motor Grader—used for sloping the canal sides—completes the spread.

Each D8 pulls a No. 90 Scraper, while the D9 backs them up with its mighty pushloading force. The D7 dozes and pulls a sheeps-foot roller. This efficient spread moves about 4500 yards a day. Even with tricky mountain maneuvering, scrapers make 5 to 6 minute cycles.

This application is another demonstration of the efficiency of crawler-drawn scrapers—on the short hauls, for the rough ground and underfoot conditions that are mean and tricky.

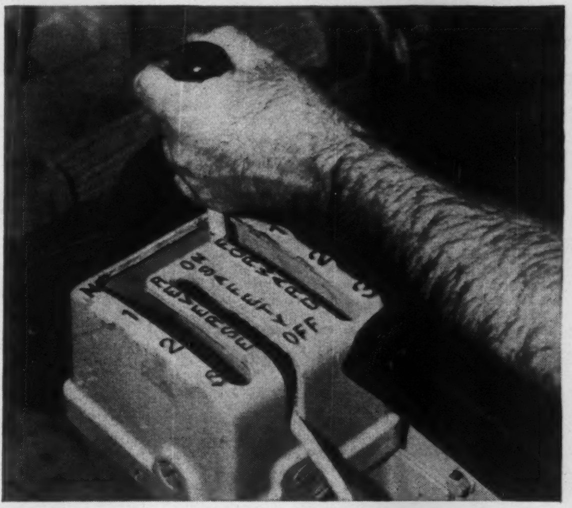
This is exactly the kind of going that Cat crawler-scraper combinations can convert to high production. They're self-loading or, for even higher production, they can be pushloaded. And with the added brawn of recent improvements, Cat crawler-drawn Scrapers haul bigger loads, last longer. Your Caterpillar Dealer has four-wheel Scrapers to match the D9, D8, D7 and D6 Tractors and to fit different hauling needs. And he has the tractors to match any job that comes your way! New 335 HP D9 Series E . . . the new D8 Series H—up 44 HP to 235 . . . the 140 HP D7 Series D. See your Cat Dealer for the quality equipment . . . before you bid on your next tough job.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

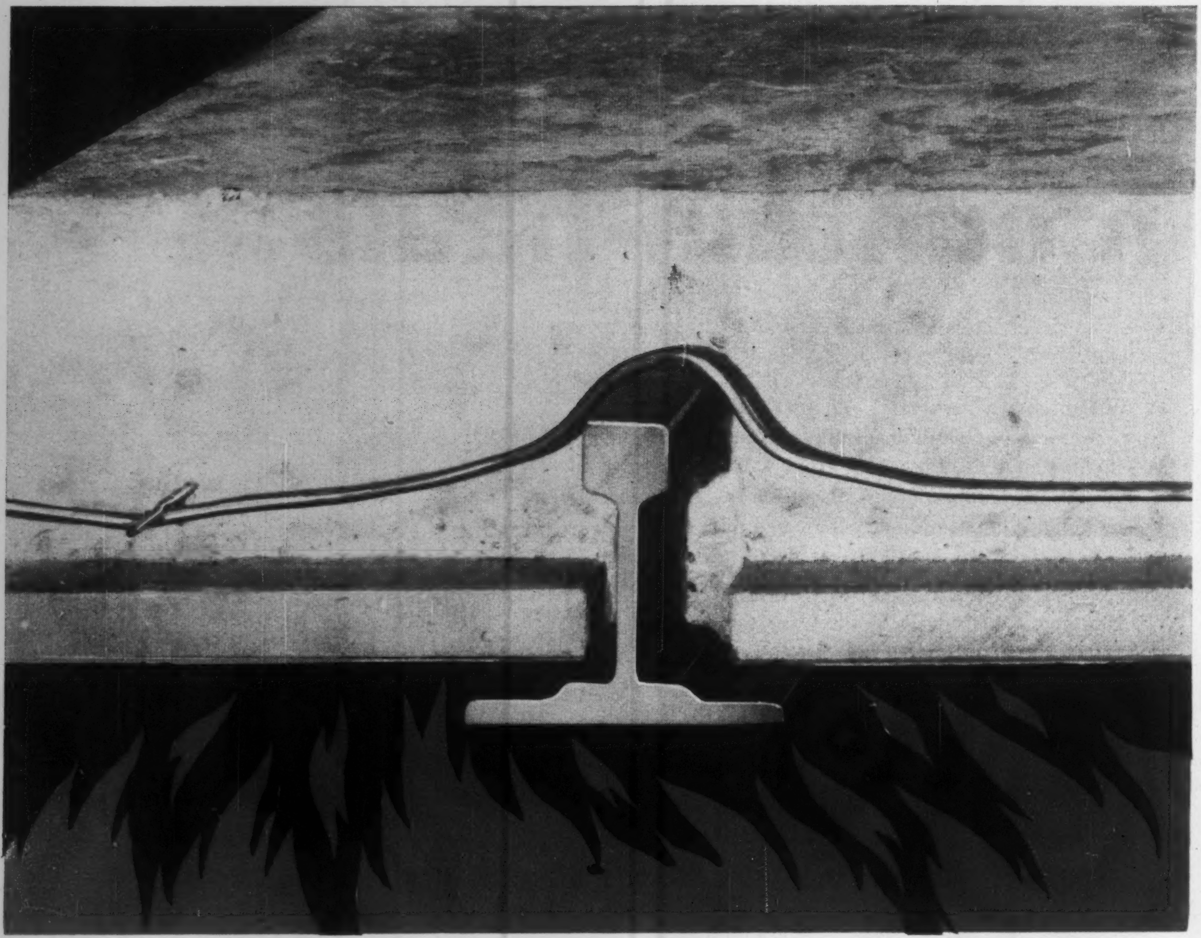
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BORN OF RESEARCH
PROVED IN THE FIELD



POWER SHIFT TRANSMISSION MAKES THE D8 AND D9 EVEN MORE NIMBLE

Shift on-the-go under full load in a split second. No more clutching. Shift in a single motion with a flick of the selector lever. Even when conditions are as tough as those above, operators will move more dirt with the new Cat power shift transmission.



Lowest possible fire insurance costs with poured gypsum roof decks

Nobody knows the facts of fire safety like the insurance companies. That's why it's significant that Fire Insurance Rating Bureaus in 17 midwestern states allow dramatically lower fire insurance premium rates for poured gypsum roof decks than most other roof decks. Rates for other "noncombustible" roof constructions can be 3½ to 4½ times higher due to rating penalties.

Add these other advantages: the extra strength of integrated construction . . . a monolithic slab . . . fire ratings up to 2 hours . . . and you'll see why poured gypsum is the best value you can get in a roof deck.

Ask your Gold Bond Representative® about the fire insurance benefits of poured gypsum—or write Dept. EN-460 for a list of states where lower rates are already available and the latest fire test data.

NATIONAL GYPSUM COMPANY, BUFFALO 13, NEW YORK

Gold Bond
BUILDING PRODUCTS
. . . a step ahead of tomorrow

(Continued from page 87)

▲ **Diversified Builders,** 6855 E. Rosecrans Blvd., Paramount, Calif., CA **$5,000,000,** PLANT for mfg. white cement at Crestmore, near RIVERSIDE, CALIF. Riverside Cement Co., 621 S. Hope St., Los Angeles, Calif.

CANADA

BUILDINGS—LB & CA

▲ **Elder Mines & Developments Ltd.,** 25 Adelaide St. W., Toronto, Ont., CA Est. **$2,500,000,** 250,000 sq. ft. brick, aluminum siding PLANT, BRAMPTON, ONT. American Motors (Canada) Ltd., 2951 Danforth Ave., Toronto, Ont. Awarded Mar. 23. CD 3/28.

▲ **Procon (Canada) Ltd.,** 40 Advance St., Toronto, Ont., CA **$2,700,000,** two processing units PLATFORMERS AND MIDDLE DISTILLATE UNIFORMER, REGINA, SASK. Consumers Cooperative Refineries, Ltd., 9th N St. Regina, Sask. Awarded Mar. 21. CD 10/22.

PUERTO RICO

BUILDINGS—LB & CA

▲ **Metropolitan Builders, Inc.,** 1501 Ashford Ave., San Juan, Puerto Rico, CA Est. **$3,400,000,** design and construct 16 story, 78 unit APARTMENT, COMMERCIAL, parking, SAN JUAN, PUERTO RICO. Park Realty Corp., 1501 Ashford Ave., San Juan, Puerto Rico.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲ **Colombia**—Bids Asked—Empresa de Energia Electrica de Bogota, earthfill dam lined diversion tunnel, Tomine River. OLAP-Ingenieria, Apartado Aereo 5099, Bogota, consult. engrs. Contractors interested in project should send full particulars of their experience to consulting engineers. Specifications available Apr. 1.

BUILDINGS—LB & CA

▲ **Patterson-Emerson-Comstock, Inc.,** 313 E. Carson St., Pittsburgh, Pa., U. S. A., CA Total cost 5 year program **$84,000,000,** design and construct STEEL MILL, BUENOS AIRES, ARGENTINA. Corporacion Interamericana de Aceros, S. A. (International Steel Corp. S. A.).

U. S. POSSESSIONS

HEAVY CONSTRUCTION—LB & CA

▲† **Foster Constr. Co. & Williams Bros.,** National Bank of Tulsa Bldg., Tulsa, Okla., CA **$6,353,000,** wid'n. Empire Reach, Panama Canal, CANAL ZONE. Panama Canal Co., Canal Zone, Balboa Heights, Canal Zone. Bids Feb. 29 CD 3/2, under LB.

FOREIGN

▲ **Philippine Islands**—BA 4/22—National Power Corp., Manila, dam-multi-purpose power, water, irrigation, flood control, Rizal Province, Manila. $54,000,000. CD 12/22/58.

▲ **Greece**—AIRFIELD—BA 6/1—General Air Staff, Directorate of Public Works, 9 Lycurgus St., Athens, airfield (NATO project) $3,200,000.

BUILDINGS—BA

▲ **Australia** — TURBO-GENERATOR — BA 6/20—Electricity Comn. of New South Wales, Commercial Manager & Secretary, 15 Castlereagh St., Sydney, N.S.W., supply and erection of one 275 megawatt turbo-generator with associated ancilliary plant for Vales Point Power Station on shores of Lake Macquarie, Spec. 1005. $6,750,000. Plans deposit $225.

▲ **Australia**—RE-HEAT BOILER—BA 7/4—Electricity Comn. of New South Wales, Commercial Manager & Secretary, 15 Castlereagh St., Sydney, N.S.W., supply and erection one 275 megawatt semioutdoor type re-heat boiler with associated ancilliary plant and bldg. works at Vales Point Power Station on shores of Lake Macquarie, Spec. 1004. $9,000,000. Plans deposit $225.

AMERICANS ABROAD

HEAVY CONSTRUCTION—BA

▲ **Vinnell Corp. of California,** 1145 Westminster Ave., Alhambra, Calif., U. S. A., CA Est. **$2,748,000,** air conditioned Central Government Building, SEOUL, KOREA. South Korean Economic Bd., Seoul, Korea. Awarded Mar. 2.

BUILDINGS—LB & CA

▲ **Foster Wheeler Ltd.,** 3 Ixworth Pl., London SW 3, England, and Societe Fives-Penhoet, Paris, France, CA Est. **$3,000,000,** 20,000 bbl. per day REFINERY and TERMINAL for Dansk Veedol, KALUNDBORG, DENMARK. Tidewater Oil Co., 4201 Wilshire Blvd., Los Angeles 5, Calif., U. S. A. CD 9/22.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Alabama**—Sand Mountain Water Co., Box 29, Fort Payne, water lines, DeKalb and Jackson Counties. **$2,000,000.** Ladd Engineering Co., P.O. Box 29, Fort Payne, consult. engr.

▲ **Va., Charlottesville**—City, City Hall, water storage dam, south fork Rivanna River. **$3,150,000.** Polgaze & Basenberg, 812 S. 27 St., Birmingham, Ala., consult. engrs.; water transmission lines, **$200,000;** water treatment plant, **$500,000.**

▲ **Va., Norfolk**—City, Dpt. P. Wks. City Hall, voted bonds Mar. 15, water distr. lines extension **$3,150,000;** reservoir and dam, Western Branch Nansemond River, **$3,000,000;** unit, Moores Bridge Water Filtration Plant, **$1,500,000.** CD 2/5.

SEWERS, WASTE DISPOSAL

▲ **Ind., Auburn**—City, City Hall, sewerage sys. **$2,000,000.** Boyd Phelps, Inc., 711 K of P Bldg., Indianapolis, consult. engr.

▲ **Pa., Johnstown**—Highland Sewer & Water Auth., 2748 Bedford St., 236,495 ft. sewer 7 sewage lift stations 1.5 mgd filter sewage treatment plant to service Geistown Boro, Richland and Stonycreek Twps. To go ahead 1960. **$3,036,784.**

BRIDGES

▲ **NEW YORK**—State Dpt. Wks., State Office Bldg., Albany,
New York Co.—Franklin Delano Roosevelt Dr., Contr. 48, 34th St. overpass 0.7 mi. E. 30th St. to 40th St. **$6,000,000.** To go ahead in 1960.

▲ **Va., Richmond**—City, Dpt. P. Wks., 217 Governor, 9th St. Bridge over James River, **$6,500,000.**

STREETS AND ROADS

▲ **NEW HAMPSHIRE**—Dpt. P. Wks. & Hys., Concord,
Salem-Windham-Derry-Londonderry—13 mi. 4-lane highways, Proj. I-03-1 (33) 3. **$10,000,000.** Clarkeson Engineering Co., 285 Columbus Ave., Boston 16, Mass., consult. engr.

▲ **New York**—President Queens Boro, Boro Hall, Kew Gardens,
Brooklyn-Queens Expressway, Contrs. 8 & 11, structures and 0.4 mi. paving Woodside Ave. to 64th St. **$5,000,000.** To go ahead late 1960.
Brooklyn-Queens Expressway, Long Island R.R. bridge 0.03 mi. **$1,400,000.** To go ahead Spring 1960.
Brooklyn-Queens Expressway, Contrs. 12 & 13, structures and 0.4 mi. paving 64th St. to 58th Pl., **$1,200,000,** Queens Boro. To go ahead 1961.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,
Bronx Co.—Boston Rd. imprvt.; Mace Ave. to New England Thruway 2.6 mi. **$25,600,000.** Clarke & Rapuano, 830 Third Ave., New York, Zone 23, engrs. To go ahead in 1964. CD 5/21/45, under N. Y., New York.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,
Bronx Co.—Sheridan Expressway extension: Cross-Bronx Expressway to Mace Ave. 2 mi. **$9,200,000.** To go ahead in 1963,
Sheridan Expressway: Contr. 2, Lowell St. to Cross-Bronx Expressway 1 mi., **$5,600,000,** To go ahead in 1960,
Sheridan Expressway: Contr. 3, landscaping, **$79,000,** To go ahead in 1962. Clarke & Rapuano, 830 Third Ave., New York, Zone 23, engrs. CD 2/18/55.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,
New York Co.—Harlem River Drive: paving, viaduct and ramps, E. 155 St. to E. 168 St., **$6,000,000,** To go ahead in 1961,
Harlem River Drive: Contr. 132-B, paving E. 132 St. to E. 142 St. to incl. vehicular bridges at 135th and 139th Sts., pedestrian overpass at 142 St., **$2,350,000,** To go ahead Spring 1960,
Harlem River Drive: Contr. 132-D, reconstr. of parks and playgrounds, E. 151 St. to E. 155 St. **$137,000,** To go ahead in Summer 1960. CD 8/17/45, under N. Y., New York.

▲ **NEW YORK**—State Dpt. Wks., State Office Bldg., Albany,
New York Co.—Mid-Manhattan Expressway: Miller Hy., Lincoln Tunnel to F. D. R. Drive and Queens Midtown Tunnel 2.6 mi. **$51,700,000.** Andrews & Clark, 305 E. 63rd St., New York, Zone 21, engrs. To go ahead in 1961-62-63. CD 1/20/55, under N. Y., New York.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Armstrong Co.—Kittanning By-pass for Rte. 28 and 422, **$8,000,000.**
Butler Co.—North-South By-pass for Butler Rte. 8 (separate from east-west by-pass Rte. 422), **$1,500,000.**
Centre Co.—reconstruction 15 mi. Rte. 322 between Phillipsburg and Martha Furnace, **$1,200,000.**
Indiania Co.—Indian Pa. by-pass Rte. 422, **$5,000,000.**
Lebanon Co.—East-west Lebanon By-pass for Rte. 422, **$6,000,000.**
By-pass for Rte. 322 east-west around community of Cornwall boro, **$2,000,000.**
Luzerne Co.—reconstruction Rte. 309 between Luzerne Boro and proposed Anthracite Expressway (Rte. 1005), **$5,000,000.**
Monroe Co.—reconstruction 5 mi. Rte. 12 between Saylorsburg and Snydersville, **$4,500,000.**
reconstruction about 3 mi. Rte. 12, between Snydersville and Bartonsville, **$3,000,000.** F. S. Poorman, c/o owner, engr.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Clinton and Lycoming Counties—reconstruction about 4 mi. U. S. Rte. 220 between Avis and Jersey Shore, **$2,750,000.**
Crawford and Venango Counties—reconstruction about 11 mi. U. S. Rte. 322 between Wyattsville and Cochranton, **$2,200,000.**
Elk Co.—reconstruction about 11 mi. U. S. Rte. 219 between Ridgeway and Challenge, **$1,500,000.** F. S. Poorman, c/o owner, engr.

EARTHWORK, WATERWAYS

▲ **Quebec**—Quebec Hydro-Electric Comn., 107 Craig St. W., Montreal, dam to control waters of Riviere des Prairies, between Ile Bizard and Montreal Island, Montreal, **$2,000,000.** Gabriel Rousseau, c/o owner, ch. engr.

PUERTO RICO

▲ **Puerto Rico**—HOTEL, etc.—Resorts International, Inc., 855 6th Ave., New York, N. Y., U. S. A., 14 story hotel, swimming pool. **$12,000,000.**

FOREIGN

▲ **East—Germany**—P. Wks. Ministry, East-Berlin, 16 mi. speedway with two lanes of 22 ft. each, Rostock. **$28,000,000.**

▲ **Hungary**—OIL PIPE LINE—Hungarian State Oil Agency, Budapest, 78 mi. 20 in. oil pipe line, Szazhalombatta. **$8,700,000.**

AMERICANS ABROAD

▲ **Philippine Islands, Manila**—Manila Electric Co., sub General Public Utilities Co., 67 Broad St., New York, N. Y., U.S.A., 60,000 kw. steam powered electric generating unit, at Rockwell Station. **$9,700,000.**

▲ **West Germany, Berlin** — HOUSING, etc. — Geminnutzige Heimstatten-AG, Knobelsdorffstr. 95, Berlin, plans by Walter Gropius, 63 Brattle St., Cambridge 38, Mass., U. S. A., 15,000 unit housing development incl. school, market, churches. **$100,000,000.**

PUBLIC BUILDINGS

▲ **Ariz., Tucson**—HIGH SCHOOL—Bd. Educ., City Hall, plans by Gordon M. Luepke, 232 E. 6 St., high school, **$5,000,000.** CD 3/4.

▲ **Calif., San Diego**—SCHOOLS—San Diego Unified School Dist., 4100 Normal St., **$44,927,000** bond election June 7, schools.

▲ **Colo., Pueblo**—HOUSING—Pueblo Public Housing Auth., Plans by Kenneth J. Stines, 222 S. Victoria Ave., public housing, **$2,000,000.** Bids in Summer. CD 5/20.

▲† **Ky., Paradise**—STEAM PLANT—Tennessee Valley Authority, New Sprankles Bldg., Knoxville, Tenn., plans by Vincent G. Kling, 917 Corinthian Ave., Phila. 30, Pa. Paradise steam plant, **$100,000,000.** CD 10/6.

▲ **Minn., Winona**—COMMUNITY HOSPITAL—Community Memorial Hospital, c/o Schmidt, Garden & Eriksen, archts.-engrs., 104 South Michigan Ave., Chicago, Ill., 90,000 sq. ft. community hospital, east shore of Lake Winona. **$3,500,000.** CD 12/5/57.

▲ **N. J., Cranford**—SCHOOL—Bd. Educ. Twp. of Cranford, defeated referendum on bonds and project Mar. 15, 2 story high school, Orange Ave. **$3,772,000.** Epple & Seaman, 901 Broad St., Newark, archts. CD 1/27.

▲ **N. J., Point Pleasant**—HIGH SCHOOL—Bd Educ., defeated project and bonds submitted to referendum Mar. 15, high school, **$2,800,000.** Boyken & Moss, 90 Bayard St., New Brunswick, archts. CD 2/15.

▲ **N. Y., Cheektowaga**—SCHOOL—Union Free School Dist., plans by Foit & Baschnagel, 250 Delaware Ave., Buffalo, Junior-Senior High School. **$2,600,000.**

▲ **N. Y., Mount Vernon**—SCHOOL—Bd. Educ., 257 4th Ave., plans by Sherwood, Milis & Smith, 65 Broad St., Stanford, Conn., high school. **$7,200,000.** CD 12/21.

▲ **N. Y., New York**—BUS STATION—Port of New York Authority, III 8th Ave., New York 11, 3 level bus station, over George Washington Bridge Expressway, Fort Washington and Wadsworth Aves. **$13,000,000.** CD 2/20/57.

▲ **N. Y., North Tonawanda**—SCHOOL—Bd. Educ., 236 Goundry St., plans by Pfohl, Stoll & Roberts, 185 Niagara St., Buffalo, high school. **$3,850,000.** Bids by Fall. CD 1/20.

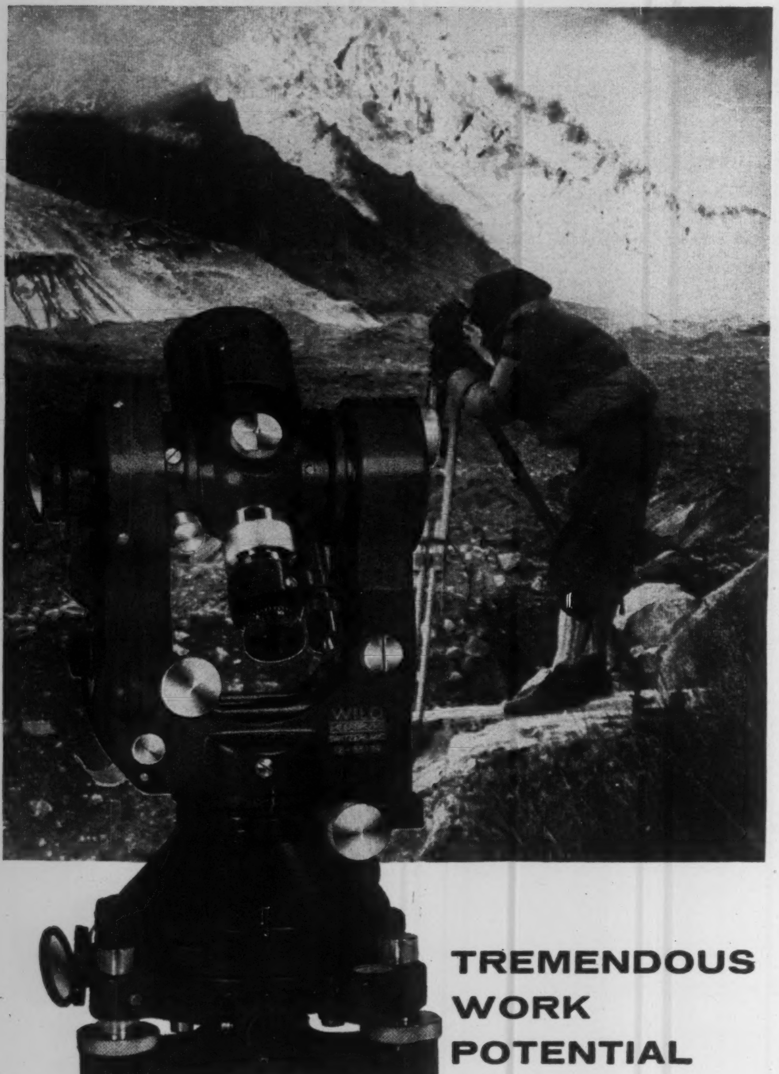
▲ **N. C., Raleigh**—CELL BLOCKS—North Carolina Prison Comn., Cary Rd., cell blocks, Camp Polk Prison, **$2,000,000.**

▲ **Va., Princess Anne**—SCHOOLS—Princess Anne Co. School Bd. voted bonds Mar. 15, Eastern High School, **$2,000,000,** CD 2/8; Western High School, **$2,000,000;** school, Oceana, **$500,000;** school, Virginia Beach, **$500,000;** school, Princess Anne, **$500,000.**

COMMERCIAL BUILDINGS

▲ **Ala., Birmingham**—PROFESSIONAL—J. H. Perkins Co., Inc., 1921 11 Ave. S., plans by Warren, Knight & Davis, **Protective Life Bldg.,** 14 story, doctors' professional bldg. to be known as University Towers, 8 Ave. and 19 St. S. **$2,500,000.**

▲ **Conn., Hartford**—CONVENTION HALL—Constitution Plaza, Inc., 111 Talcott St., "Trumbull Center," Convention Hall, 60,000 sq. ft. exhibition space. **$7,000,000.** CD 11/20/58.



T-2 UNIVERSAL THEODOLITE

The Wild T-2 enables the operator to work rapidly, precisely and steadily under conditions that may range from equatorial to antarctic.

Optical and mechanical excellence, plus negligible maintenance requirements, combine with a complete list of accessories to make the T-2 the finest instrument in its class by far.

Write or phone for Booklet T-2 for complete data.

Full Factory Services

WILD HEERBRUGG INSTRUMENTS, INC.

MAIN AT COVERT STREET, PORT WASHINGTON, NEW YORK • PORT WASHINGTON 7-4843

▲ **Fla., St. Petersburg** — APARTMENTS — Southgate Towers, Maderia Beach, St. Petersburg, plans by O. C. R. Stageburg, 5705 Tangerine Ave., South Gulfport, St. Petersburg, four 6 story 63 unit steel, concrete apartments, swimming pool, **$4,300,000.**

▲ **Ill., Chicago**—APARTMENT—Jerrold Wexler & Jack Galter, 120 S. LaSalle St., plans by Kirschfeld & Pawlan, 327 S. LaSalle St., Zone 4, 27 story apartment, 215 E. Chicago Ave. **$6,000,000.** Bids in July.

▲ **Minn., Edina (P.O. Minneapolis)**—HOSPITAL, etc.—Fairview Hospital, 2312 South Sixth St., Minneapolis, plans by Ellerbe & Co., 333 Sibley St., St. Paul, 200 bed hospital, nurses residence, etc. **$5,000,000.** Constr. to begin in 1963. CD 7/7.

▲ **Minn., St. Paul**—SHOPPING CENTER—Palen Center, Inc., 419 Commerce Parkway, 264,000 sq. ft. shopping center, 2500-car parking NE corner Prosperity Ave. and Johnson Parkway. **$10,000,000.** Constr. soon. CD 2/5/59.

▲ **N. Y., New York**—TELEPHONE EXCHANGE, etc.—New York Telephone Co., 140 West St., Zone 7, plans by Voorhees, Walker, Smith, Smith & Harris, 101 Park Ave., Zone 17, 21 story telephone exchange and office, 789-813 Tenth Ave. **$13,000,000.**

▲ **N. Y., New York**—APARTMENT—Sarkis Bldg. Corp., c/o Z. M. Sourian, archt., 10 W. 55th St., 15 story apartment, Madison Ave. and East 90th St. **$2,755,000.**

▲ **N. Y., New York**—OFFICE—23 West 57th Street Corp., c/o Z. M. Sourian, archt., 10 W. 55th St., 28 story office, 30-34 W. 58th St. **$6,000,000.**

▲ **O., Akron**—MOTEL—Leonard Server & Assocs., 189 W. Randolph St., Chicago, Ill., 11 story, 200-room motel, 3-sublevel parking garage, swimming pool, State St. near Water St., called Executive Tower Motor Hotel. **$2,500,000.** L. R. Solomon & J. D. Cordwell & Assocs., 61 W. Superior St., Chicago, Ill., archts. Bids in April. CD 10/8.

▲ **O., North Olmstead**—HOMES—Alvin Homes, 18009 Holland Rd., Berea, plans by Nathan Berstein, 1991 Lee Rd., Cleveland, Zone 18, 100 homes, **$2,000,000.**

▲ **O., Warrensville Heights**—APARTMENT—J & E Builders, 2199 S. Green Rd., Cleveland, Zone 21, plans by Marvin Rukin, 13947 Cedar Rd., Cleveland, Zone 18, 325 suite apartment, Green Rd. between N. Miles and Emery Rds. **$3,250,000.**

▲ **Pa., Bala Cynwyd**—MOTOR HOTEL, etc.—Hot Shoppes, Inc., 5161 River Rd., Bethesda, Md., plans by William Tabler, 401 7th Ave., New York, N. Y., motor hotel and restaurant. **$5,000,000.** Seelye Stevenson, Valvue & Knecht, 101 Park Ave., New York, N. Y., consult. engrs. CD 5/18.

▲ **Tex., El Paso**—BANK, etc.—El Paso National Bank, Texas and Stanton Sts., plants by Carroll & Daeuble & Associates, 1001 E. Yandell St., and Geo. L. Dahl, 2101 N. St. Paul St., Dallas, 18 story, bsmnt., 640,000 sq. ft., masonry, air-conditioned bank and office, Stanton St. **$6,500,000.**

▲ **Tex., Houston**—SHOPPING CENTER, etc.—J. S. Oshman & Associates, 2310 Maxwell Lane, 18 story unit, 174,000 sq. ft. masonry shopping center, **$2,000,000;** hard-paved shopping area and auto center, **$100,000;** site earthwork, **$60,000;** old Spanish Trail and Scott St.

▲ **Va., Goochland**—HOUSING—Eugene B. West Sr., Mooreland Farms, Richmond, housing subdivision, River Road, Rte. 6, opposite Country Club of Virginia. Over **$3,000,000.**

▲ **Va., Richmond**—APARTMENT—Paul Gordon & Assocs., 5410 Williamsburg Rd., 256 unit apartment, Southside. **$2,000,000.**

▲ **Alta., Lethbridge**—SHOPPING CENTRE—Canada Safeway Ltd., 313 Pacific Ave., Winnipeg, Man., shopping centre, 16-19th Aves. **$2,000,000.**

▲ **Ont., Oakville**—SHOPPING CENTRE—Oak-Queen Shopping Centre, c/o White, Bristol, Beck & Phipps, 335 Bay St., Toronto, plans by Bregman & Hamann, 146 Bloor St. W., Toronto, shopping centre, South Service Rd. **$3,000,000.**

INDUSTRIAL BUILDINGS

▲ **Ga., Cartersville**—PLANT—Goodyear Tire & Rubber Co., 349 W 1 St., Dayton, O., tire fabric plant **$2,500,000.**

▲ **Ill., Galesburg**—FACTORY—Gates Rubber Co., 999 S. Broadway Ave., Denver, Colo., industrial hose rubber factory. **$3,500,000.**

▲ **N. Y., Henrietta**—SUBSTATION—Rochester Gas & Electric Corp., 89 East Ave., Rochester, substation. **$6,000,000.**

▲ **O., Warren**—PLANT—General Motors Corp., Packard Electric Div., 305 Dana St. N.E., Warren, 255,000 sq. ft. plant addn. **$2,500,000.**

▲ **Tenn., Hohenwald**—PLANT—American Biltrite Rubber Co., 22 Willow St., Boston, Mass., 166,000 sq. ft. plant, braided steel reinforced hydraulic hoses, **$3,000,000.**

▲ **Tenn., New Johnsonville**—PLANT—Foote Mineral Co., Rte. 29, Exton, Pa., manganese refining plant, **$10,000,000.**

UNCLASSIFIED

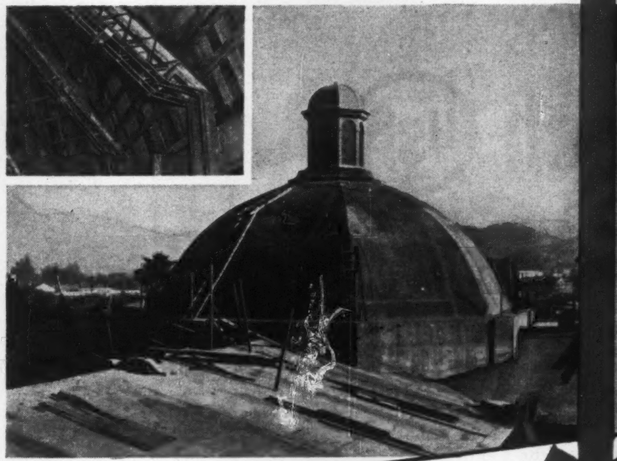
▲ **Va., Charlottesville**—FIELDHOUSE—Dpt. Educ. State of Virginia St., Office Bldg., Richmond, plans by Anderson, Beckwith & Haible, Charlottesville, fieldhouse, University of Virginia. **$2,500,000.** CD 1/20.

(Proposal Advertisements see pp. 105 to 108)

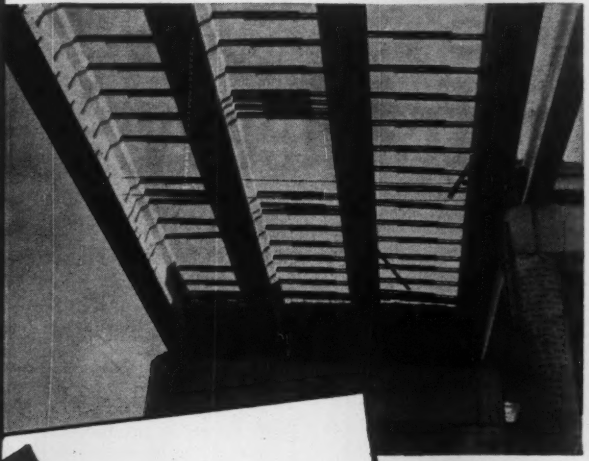
REX™ Spanall

CONCRETE SHORING

spans them all



CONTRACTOR: MAYFAIR CONSTRUCTION COMPANY



CONTRACTOR: HUMPHREYS & HARDING, INC.

from 4' to 83' and everything in between

OVER 3,000,000 FEET NOW IN USE IN THE UNITED STATES

Literature available from your local distributor or from REX-SPANALL, INC. in New York.

Rex-Spanall features a complete line of equipment designed and sized for any concrete shoring job.

Recent applications are pictured above. On the left is the concrete dome of the St. Charles Church in No. Hollywood, California. Inset shows how versatile SPANALL 730 (adjustable for spans from 7' to 30') was used to support this difficult formwork.

At the right you see a new member of the family—SPANALL 46 (adjustable from 4'-2" to 6'-11") used in the construction of the Southwest Expressway in Washington, D.C.

Rex-Spanall also provides SPANALL 610 (adjustable from 6' to 10') and SPANALL 1015 (adjustable from 9'-11" to 15'-5")—both engineered to fill your specific building and construction requirements.

For your heavy duty jobs, Rex-Spanall offers the SPANALL 15 TRUSS ASSEMBLY for spans to 83', and TRIPOD SHORING for heights to 45' and more.

Time-saving, cost-saving VERTICAL SHORES, for your everyday building needs, are available for heights from 3'-5" to 14'-1".

An experienced Engineering Staff is at your service for individual, detailed layouts, and also for practical on-the-job recommendations for your particular project.

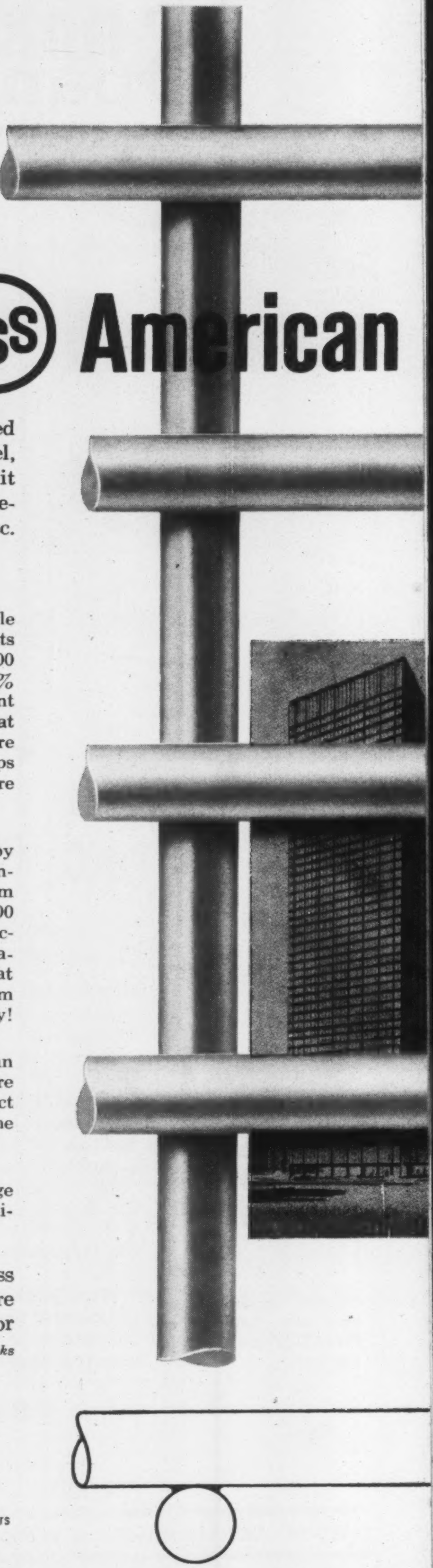
All Spanall Products have been load-tested—in the laboratory and on the job. If it's SPANALL, it's completely dependable.

Call your distributor and take advantage of the *complete* shoring service offered by Rex-Spanall.

REX-SPANALL, INC. a Subsidiary of Chain Belt Company

787 United Nations Plaza New York 17, New York

BUILDING CONSTRUCTION ● BRIDGE CONSTRUCTION ● ROAD CONSTRUCTION ● HEAVY CONSTRUCTION



It's new...
it's big...
it's strong...

extra-heavy ½ inch USS American

Welded Wire Fabric is now available with ½" diameter wires spaced as close as 2" on centers in both directions! These new areas of steel, plus the many time-tested advantages of Welded Wire Fabric, make it the ideal structural reinforcement for all types of construction—one-way slabs, two-way flat plates or flat slabs, walls, slabs on grade, etc.

Consider these advantages:

1. American Welded Wire Fabric is produced from cold-drawn high tensile steel wire. This wire is carefully produced to conform to the requirements of ASTM Specification A82-58T. The minimum tensile strength is 75,000 psi and the minimum yield point, as defined in this specification, is 80% of the tensile or 60,000 psi. Actually, cold-drawn steel wire has no yield point in the conventional sense—no sudden excessive elongation. This means that cold-drawn wire tends to resist stress practically throughout its entire strength range without revealing any sudden elongation such as develops in a typical hot-rolled bar. This physical advantage of cold-drawn wire makes it the ideal concrete reinforcement.

2. American Welded Wire Fabric is completely machine prefabricated by electrically welding all wire intersections. The strength of these welds conforms to ASTM Specification A185-58T which requires that the minimum average shear value of the weld in pounds shall not be less than 35,000 multiplied by the area of the longitudinal wire. This high-strength connection assures positive "mechanical anchorage" in the concrete. In fact, laboratory tests reported in the ACI Proceedings, Vol. 48, April, 1952, show that this anchorage is so good that fantastically high bond stress values from 1000 psi to 2700 psi are computed using conventional bond stress theory!

3. American Welded Wire Fabric is prefabricated with greater accuracy than can normally be relied upon in field work. The wires may not vary more than ¼" center-to-center than the specified spacing. This assures correct placement and distribution of the steel. Also, the wires are drawn to the very close tolerance of 0.003".

4. American Welded Wire Fabric requires very little on-the-job tying. Large prefabricated sheets are shipped to the job and placed as a unit. This eliminates thousands of ties and results in important labor savings.

The representatives of American Steel & Wire will be pleased to discuss with you the many advantages and applications of Welded Wire Fabric. Just contact American Steel & Wire, Dept. 0185, 614 Superior Ave., N.W., Cleveland 13, Ohio.

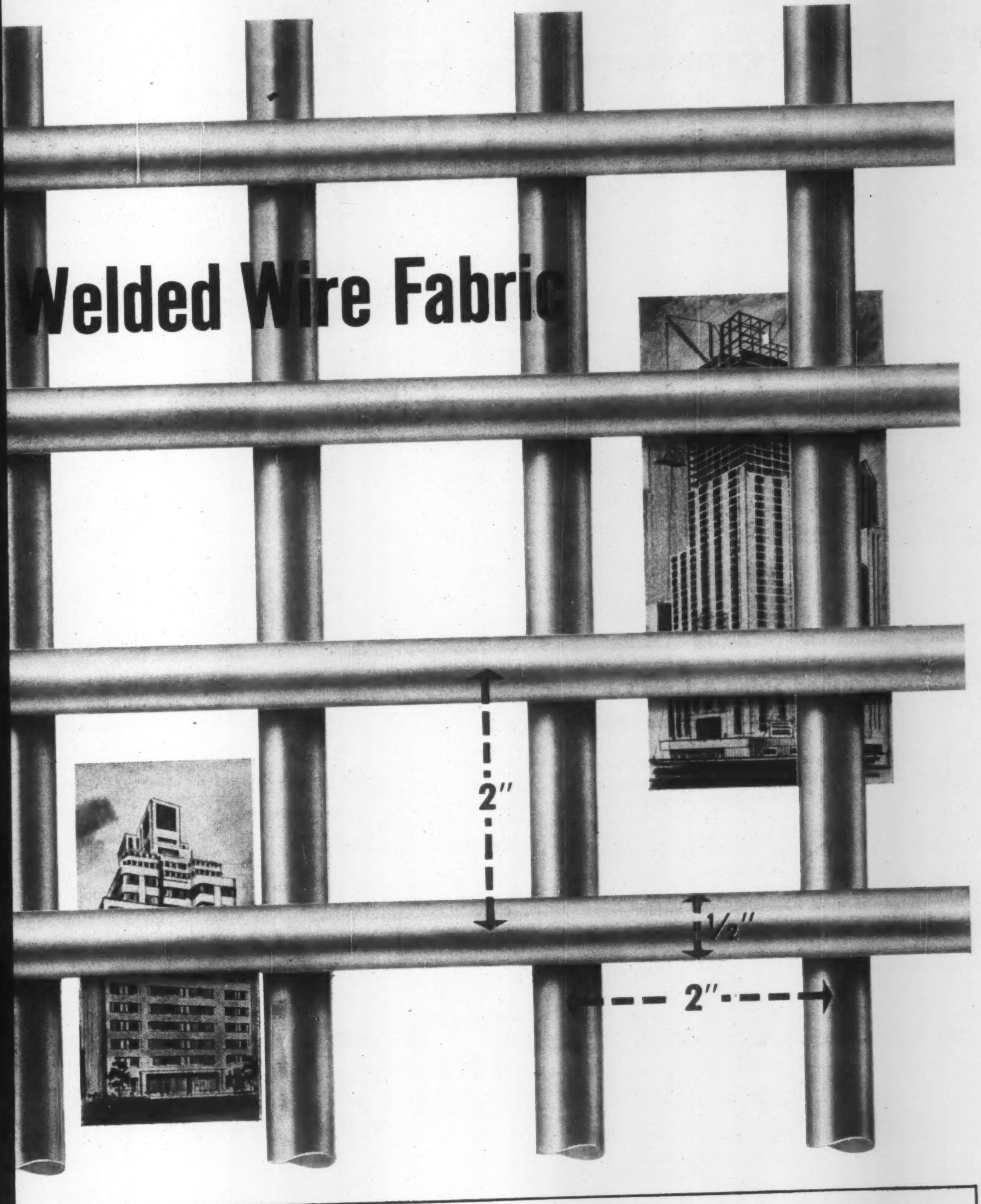
USS and American are registered trademarks

USS

American Steel & Wire
Division of
United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad

Welded Wire Fabric



"We tried several big haulers... and the 65 Payhauler® tops 'em all!"

—New Hope Crushed Stone & Lime Co.,
New Hope, Pa.

New Hope's "65's" speed full 19-ton loads of dolomite from quarry to 300-ton-per-hr. capacity crusher—with a maximum climb-out grade of 16% and an 800-ft. haul! The 250-hp "65" travels up to 36 mph.; the 375-hp "95" up to 38 mph.!

"Before buying two International® 65 Payhauler trucks, we had demonstrations by several large haulers," reports Edgar N. Putnam, for New Hope Crushed Stone & Lime Co.

"The '65' topped them all for production, ease of operation, and all-around efficiency. Main '65' features are ample power, balance for full-load delivery, and genuine operating ease and safety."

Both the 19-ton 65, and 27-ton 95 Payhauler trucks have the strength-multiplying International corrugated body design—that sheds weight, increases capacity. The direct-start International "817" engine super-powers both "65" and "95"—to outspeed former models, up to 40%. And both "65" and "95" highball full loads safely with reserve-area braking and new course-holding power-steering!

Compare—prove on the job that Payhauler gives you top off-road capacity; top power-to-weight ratio; top profit-earning ability! Let your International Construction Equipment Distributor demonstrate!

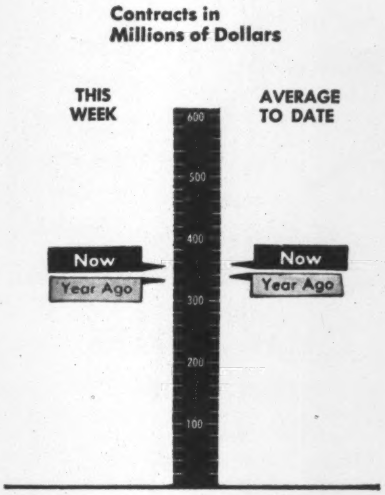
Get 11-second Payhauler dumping with exclusive inverted hoist body-positioning. Positive up-and-down snubbing control prevents machine-mauling dumping impact!

International® Construction Equipment

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

Construction Scoreboard

This Week . . .



AMOUNT OF CONTRACTS LET

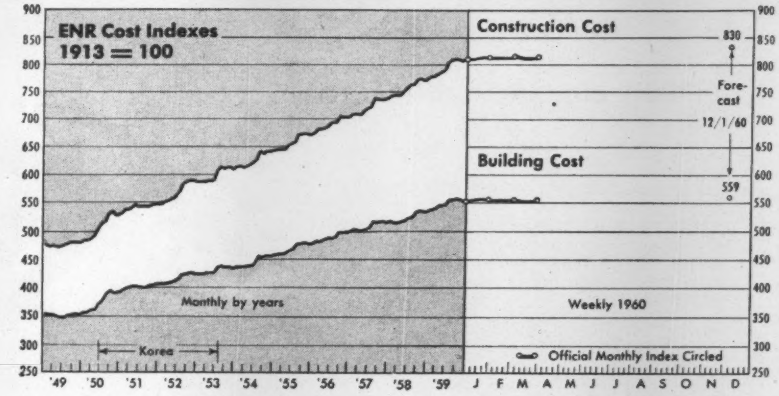
Contracts Awarded In 50 States By Type	This Week millions	Cum. 14 wks 1960 millions	Chge '59-'60 %
All Heavy Construction	$356.2	$5,024.9	+ 1
By Ownership			
PRIVATE	175.7	2,651.5	+11
PUBLIC	180.5	2,373.4	− 7
State & Municipal	139.7	1,775.2	− 2
Federal	40.8	598.2	−19
By Type of Work			
PUBLIC			
Waterworks	4.1	80.2	−31
Sewerage	6.8	143.7	− 3
Bridges*	52.9	264.5	+64
Highways	39.8	682.9	− 4
Earthwork, Dams & Waterways	2.9	171.1	−10
Buildings:			
Excl. Housing	39.6	550.0	−20
Housing	8.8	125.0	+15
Unclassified	25.6	357.2	−11
PRIVATE			
Buildings:			
Mass Housing	89.3	1,218.1	+23
Commercial	57.1	559.4	− 2
Industrial	26.1	585.0	−19
Unclassified	3.2	287.8	+148

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

New Construction Capital . . .

	Week of Mar. 31 millions	Cum. 13 wks 1960 millions	Chge '59-'60 %
Corporate Securities	$ 98.4	$ 660.7	−21
State and Municipal:			
All Except Housing	57.6	1,686.7	+ 5
Housing	....	13.6	−56
Federal Loans	1.6	48.1	+69
Federal Aid	....	....	....
Total Nonfederal	$157.6	$2,409.1	− 4
Federal Appropriations:			
Projects in U. S.	....	....	....
Outside U. S.	....	....	....
Total New Capital	$157.6	$2,409.1	− 4



ENR INDEXES (1913=100), 20-cities' average	Week of Mar. 31 1960	% Change from Mar. 3 1960	% Change from April 2 1959
Construction Cost	813.58	+0.01	+3.8
Building Cost	555.23	+0.01	+2.3

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

This Month . . .

WAGE RATES, 20-cities' average

	April 1960	% Change from March 1960	% Change from April 1959
Common	$2.645	+0.1	+5.5
Skilled (average 3 trades)	3.958	+0.2	+4.0
Bricklayers	4.188	+0.3	+3.2
Structural Ironworkers	3.997	+0.4	+4.5
Carpenters	3.69	0	+4.5
Equipment operators (average three types)	3.598 R	0	+4.5

MATERIAL PRICES, 20-cities' average

	April 1960	% Change from March 1960	% Change from April 1959
Structural Steel (average 3 mills), per cwt	5.50	0	0
Lumber, 2x4 Fir, per M fbm	121.29	−0.5	+0.8
Lumber, 2x4 Pine, per M fbm	109.93	−0.1	+2.2
Cement, bulk, per bbl	4.013	+0.2	+0.7
Sand, per ton	2.467	0	−0.6
Ready-mixed concrete, per cu yd	14.30	0	+2.8
Gypsum sheathing, ½"x2'x8', per Msf*	63.20	0	+0.9
Fiber board sheathing, ½" sq. ed., per Msf*	73.51	−0.2	+3.5
Mineral wool insulation, 3' batts, per Msf*	68.58	+0.2	−1.8
Crushed stone, 1½", per ton, CL	2.669	0	−3.2
Concrete blocks, sand/gravel, 8"x8"x16", each*	2.328	−0.3	+3.1

Latest Month . . .

	March 1960	Feb. 1960	March 1959
Brick, common per M	40.70	+0.6	+7.5
Lime, hydrated finishing, per ton, CL	39.39	+1.0	+3.0
Structural clay tile, 3x12x12", per M, 2,000 up*	189.26	+0.5	+1.7
Vitrified clay sewer pipe, std 12", per ft	1.426	+0.1	+3.3
Concrete sewer pipe, 12", per ft	1.391	0	+3.8

* Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost 1913=100	Construction Cost 1949=100	Building Cost 1913=100	Building Cost 1949=100	Volume 1913=100	Volume 1949=100
1959						
Mar	781.35	163.80	540.32	153.59	586	169
Apr	784.41	164.44	542.93	154.33	532	154
May	790.37	165.69	544.44	154.76	700	202
Jun	795.16	166.69	548.35	155.87	650	188
July	806.69	169.11	551.74	156.84	671	194
Aug	811.15	170.04	554.31	157.60	509	147
Sept	812.56	170.33	555.88	158.01	545	158
Oct	811.40	170.09	555.40	157.88	415	120
Nov	809.78	169.75	554.19	157.53	509	147
Dec	808.63	169.52	552.80	157.10	436	126
1959 Average	797.39	167.17	547.82	155.72	540	156
1960						
Jan	812.03	170.23	554.40	157.57	432	125
Feb	812.93	170.41	555.43	157.92	486	140 R
Mar	813.46	170.53	555.16	157.81	533	154
Apr	813.58	170.55	555.23	157.83	...	...

R: revised

DETROIT BUILDING CONTRACTORS . . .

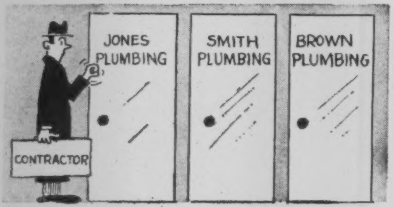
. . . are scrambling. They are in a hot competitive fight that is cutting profits to the bone, with only the fittest surviving. It's a case of . . .

Too Many Contractors; Too Few Jobs

While the building industry elsewhere has been skipping along setting new records for the last couple of years, Detroit contractors are still watching their business stumble downhill at an uncomfortable pace.

Figures show 1959 contracts were 33% below 1955—down to $513.4 million in '59 from $763.9 million in '55.

And while construction business has been declining, the Detroit Chapter of Associated General Contractors estimates that the number of contractors has increased to 600, 30% more than in 1955. Cut-throat competition, bid shopping, bid peddling and other unethical practices have Detroit builders worried.



BID SHOPPING, peddling are common.

The sharp drop of industrial construction is one of the main problems, according to most local builders. They believe manufacturers overexpanded in 1954 and 1955.

Others point to what they call Michigan's poor business climate, which they say is forcing industry to abandon Detroit and build in other parts of the nation where cheaper labor costs and more favorable tax structures can be found. But this charge has been tossed around indiscriminately by many discontented businessmen who do not take the time to properly pin-point the cause of their troubles.

The Builders' & Traders' Exchange thinks that if the number of contractors was reduced by 25%, the industry could operate profitably, even though 25% of the industry could handle the work that is now available. The exchange wants to rid the industry of marginal operators—who are obviously destined to fail—through restriction of credit and bonding, while helping the good businessman to grow by educating and assisting him. The exchange also hopes to convince suppliers and subcontractors that they should stop subsidizing the builder who is making ignorant bids, thereby spoiling what could be profitable jobs.

Suppliers hesitate to turn down a marginal operator for fear that he may get big. Subcontractors carry him for the same reason.

Established contractors in Detroit all tell the same story: Three or four years ago, when industrial construction declined, the industry was forced to lay off key people—estimators, designers, field people. These men had practical experience in some particular areas of the industry.

Out of work, many of them installed a telephone and went into the construction business. They did not know costs, and did not have a proper business background to understand all phases of the industry. So they made lots of mistakes in bidding, spoiling jobs that would have made a profit for their former bosses. Easy credit encouraged them and they began trading dollars. By the time they realized they were not turning a profit, it was too late to back out. They had to begin cut-throating to stay in business.

Meanwhile, business continued to decline, making conditions even more severe.

When residential construction dropped off sharply in 1956 and 1957, homebuilders tried their business techniques in the commercial building field and found them incompatible with that kind of construction. More jobs were spoiled.

Today it is not unusual for 30 or 35 firms to bid on a single job, say members of the exchange. On the average, there are twice as many bidders for each job than there were in 1955.

Experienced contractors say they cannot compete, because they know that among all those bids there will be some mistakes—and the job goes to the man making the biggest mistakes. He will spoil another job that should have made a profit.

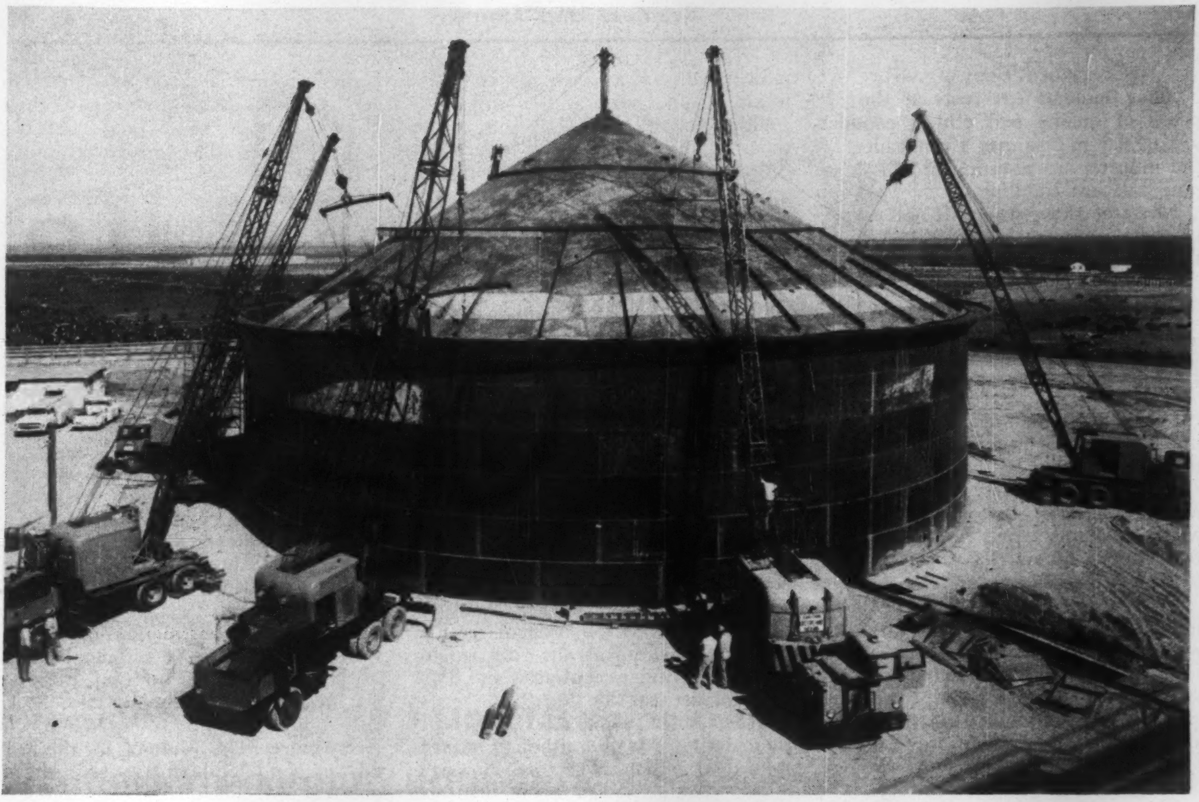
Companies that a few years ago would not touch a job below $500,000 now say they are taking bids at $200,000 to $300,000. And buildings that three years ago would get $1,000,000 are being built today for $850,000 and $900,000. Many contractors say you cannot give away $100,000 without cheating—or otherwise cutting corners.

One marginal operator recently won two small government jobs that totaled about $57,000. He had cut his bid so close that he worked evenings in the basement of his home fabricating some of the materials. He admits that his total earnings on the job amounted to about $35 a week. Another job spoiled, says the exchange.

OVERTIME work at home cuts corners.

One builder accuses the architects of not shouldering the responsibility of seeing that their specifications are understood and obeyed.

(*Continued p.* 100)



Five contractors position a 60-ton steel roof—all five use Lorain Moto-Cranes for the job.

LEAVE IT TO LORAIN . . . to build the first rubber-tire crane 41 years ago . . . to develop more sizes and introduce more innovations than any other manufacturer

First with crane carriers especially built for crane service to provide unlimited speed (up to 45 mph) mobility . . . to do a job no commercial motor truck chassis can do.

First with Square-Tubular-Chord booms that are lighter, stronger . . . increase lifting capacities and provide greater reaches for clamshell and dragline service. Available up to 200-ft., plus 40-ft. tip.

First with "Shear-Ball" connection that provides smooth, steady swings . . . reduces downtime for maintenance and frequent lubrication common to roller type designs. "Shear-Ball" is warranted for 10 years.

First with "Power-Set"® outriggers that are set in less than one minute. Four independently controlled, hydraulically operated outrigger beams automatically adjust to uneven ground or for tight quarter work.

For details, see your Lorain distributor.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

Wide range of models available

Model No.	Crane Capacity	Shovel Capacity	Carrier	Clam	Drag	Hoe
TC-107	8-ton	⅜-yd.	6x4, 6x6	x	x	x
TC-110	10-ton	½-yd.	6x4, 6x6	x	x	x
MC-218	18-ton	¾-yd.	6x4	x	x	x
MC-425	25-ton	1-yd.	6x4	x	x	x
MC-430	30-ton	1-yd.	8x4	x	x	x
MC-530	35-ton	1-yd.	6x4, 8x4	x	x	x
MC-530W	35-ton	1¼-yd.	8x4	x	x	x
MC-760	65-ton	——	8x4	x	—	—
MC-875	80-ton	——	6x4	x	—	—

LORAIN® ON THE MOVE

(*Continued from p. 98*)

Some builders cut costs at the expense of quality and ethical conduct just to stay in business. Even leaders of the industry are resorting to bid shopping and bid peddling.

Many of those who will not engage in these practices are stepping out of the business, or going bankrupt.

Edward Wendeln, of Killfoile-Wendeln, a 10-year-old firm that quit the industry this year, says his company would resume business tomorrow if it could compete ethically. But rather than sacrifice quality and reputation for jobs, he will remain outside the industry.

The Builders' & Traders' Exchange hopes to bring together all parties who have a stake in building—contractors, subcontractors, architects, suppliers, bankers, bond writers—to find a common direction and greater cohesion among them. These groups have their individual trade associations, but the exchange wants them to work as a single team, at least long enough to set up a common program of sane business measures, such as an ethical code for the mechanics of bidding, a bid deposit before a bidder can get credit, and restrictions to control the irresponsible contractor.

March Awards Top February's by 14%

Heavy construction contracts awarded in March totaled more than $2 billion, topping February lettings by 14%.

Although the average weekly rate in March was 3% below a year ago, March's volume brings the first quarter total to $4.7 billion, 1% above the first three months of last year.

Public works strengthened in March, but private awards continue to lead, with this sector topping public works for the eighth consecutive month. Every type of public work except housing gained in March. Increases over February ranged from 2% for sewerage to 58% for bridges. Housing dropped 18%.

The public works total in March was $975 million—25% above February, but 4% short of the rate of one year ago. State and municipal contracts of $712 million were 13% ahead of February and only 4% behind one year ago, helped by highway and bridge contracts that are now moving in larger volume to contractors. Other public works appear about to zoom (see p. 21).

Federal contracts jumped 78% to $263 million. The propellant was missile bases and major buildings, including a $50-million contract for additional House of Representatives office space.

But for the first three months, total public work is well behind the same period of last year, except for highway and bridge contracts. Steady gains since the December '59 low brought the first quarter 3% ahead of one year ago for highways. Bridge contracts are 39% ahead of last year's first quarter.

There was a lull in private construction during March, although awards topped $1 billion. The total, however, is 2% below a year ago for the first time this year. The slowdown trimmed the first quarter margin to 9% above a year ago compared with a 14% lead in the first two months.

Major drop in private construction came in industrial building. Volume sank 43% below February's rate and 62% below one year ago. The drop reflects the mid-1959 cutback in planning when the steel strike injected some uncertainty about steel deliveries and future costs. However, the sharp upturn in proposed industrial building since the strike settlement, plus the growing conviction that steel prices will remain fairly stable over the near-term, should make an impact on industrial contracts in coming months.

Mass housing awards still topped every type of construction in March with a total of $444 million. On a weekly average basis, however, housing is 17% below the February rate. Still, last month was the best March on record since 1956. Volume for the first quarter of $1.1 billion was 21% ahead of a year ago. The quarter total was also the biggest first quarter since 1956.

A number of office building contracts boosted commercial building in March 65% above the February rate and 25% one year ago to a total of $222 million. This pares the gap from last year for the first three months to only 5%.

One month ago, commercial building contracts were 18% behind the first two months of 1959.

Engineering Construction Contracts for March

	March, 1960							% Change '59 to '60 (av. wk.)	Three Month U. S. Cumulative		% Change '59 to '60	Canada March 1960
	New England	Middle Atlantic	South	Mid-West	Mississippi to Rockies	Far West*	Total U. S.		1960	1959		
Public Works, Total	37,796	239,873	172,912	135,981	225,647	163,350	975,561	− 4	2,192,904	2,339,597	− 6	268,655
Waterworks	2,147	2,397	6,990	6,062	9,276	7,338	34,210	−22	76,123	112,500	−32	1,649
Sewerage	3,261	10,872	11,779	9,138	6,317	9,416	50,783	− 6	136,841	141,008	− 3	3,588
Bridges	772	61,781	12,955	20,905	12,027	1,814	110,254	+78	210,619	152,058	+39	12,781
Earthwork, waterways	1,957	5,712	11,483	5,949	28,899	12,210	66,210	−40	168,220	174,236	− 4	107,751
Streets and roads	7,669	53,374	46,646	52,016	84,377	40,644	284,726	+13	642,968	622,203	+ 3	5,374
Buildings: Residential	1,624	1,146	10,117	762	8,247	11,071	32,967	−53	116,146	136,110	−15	3,731
Other	16,746	94,359	36,716	34,058	32,876	40,477	255,232	− 1	510,279	619,055	−18	32,361
Unclassified	3,622	10,232	36,226	7,091	43,628	40,380	141,179	−15	331,608	382,427	−13	11,420
State & Municipal	33,155	162,513	127,461	124,065	148,684	116,447	712,325	− 4	1,635,539	1,673,067	− 2	249,862
Federal	4,643	77,360	45,451	11,916	76,963	46,903	263,236	− 5	557,365	666,530	−16	18,793
Private, Total	93,198	213,543	71,800	176,419	277,741	193,125	1,025,826	− 2	2,475,786	2,273,948	+ 9	74,293
Bridges	90	....	....	....	....	....	90	−51	1,149	150	+666	184
Buildings: Industrial	6,774	9,114	16,945	33,205	30,528	54,829	151,395	−62	558,868	706,556	−21	30,715
Mass housing	51,539	164,317	22,143	76,863	70,886	57,934	443,682	+ 1	1,128,842	934,514	+21	23,802
Commercial	33,954	37,964	28,450	49,147	35,423	36,567	221,505	+25	502,304	526,234	− 5	19,501
Unclassified	841	2,148	4,262	17,204	140,904	43,796	209,154	+680	294,623	106,404	+167	88
Total Mar. 1960—5 weeks*	130,996	453,416	244,712	312,400	503,388	356,475	2,001,387	− 3	....	....	....	342,948
Total Feb. 1960—4 weeks*	80,427	406,549	234,660	219,076	270,174	191,337	1,402,243		....	....	....	95,659
Total Mar. 1959—4 weeks*	104,020	380,907	241,866	209,600	474,589	240,164	1,651,146		....	....	....	78,147
Three months—1960*	312,979	1,199,812	635,780	733,562	1,016,709	766,848	....		4,668,690	....	+ 1	535,122
Three Months—1959*	285,906	1,166,183	782,754	602,526	1,110,301	656,785	....		....	4,613,546	....	307,441
% Change '59 to '60	+9	+3	−18	+22	−9	+17	....		....	....	....	+74

* Includes Alaska & Hawaii Contracts.

NEW!

Presstite #55-HWY Joint Sealer sets up within 60 minutes

... offers maximum adhesion ... resistance to impregnation

This new cold-applied sealing compound is the ideal sealant for PCC highways, bridge decks, parking lots and industrial floors. It is a two-component polysulfide polymer that is cold-applied and cures rapidly.

It offers many physical properties and characteristics that are far superior to the regular sealers. For example:

- Greater resistance to impregnation by foreign matter.
- Ductility over a wide range of temperatures down to minus 20°F.
- Fast curing, non-tracking. Sets up track-free within approximately an hour after application.
- Maximum adhesion to clean concrete surfaces.
- High cohesive strength.
- Resists repeated cycles of freezing and thawing.

ALSO AVAILABLE: **PRESSTITE #55-MIL JOINT SEALER.** Designed for military and commercial airfields exposed to action and operational requirements of jet aircraft. Resists jet blast, heat, fuel and oil ... cures quickly ... will not track. CD 579.1 **CONCRETE JOINT CURING TAPE.** For freshly sawed or formed PCC joints. Protects against moisture loss from joints ... aids in curing ... reduces spalling ... keeps joints clean until sealed.

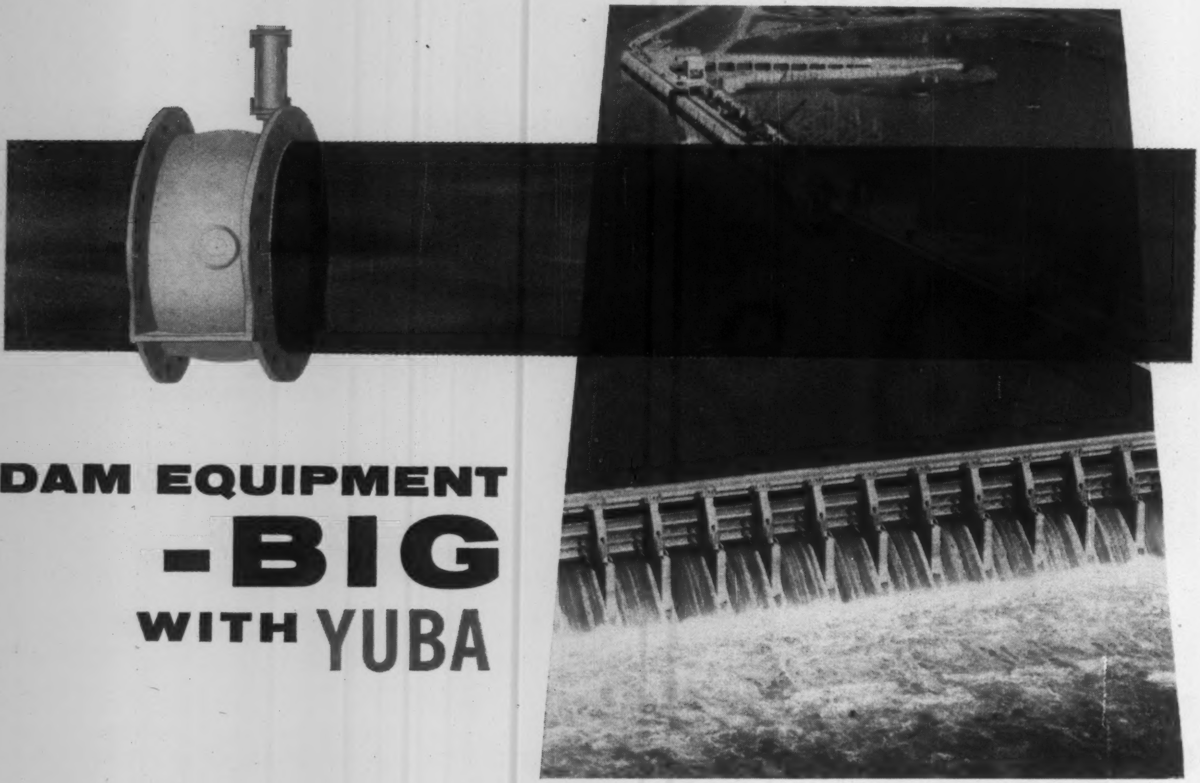
WRITE DEPT. C-15 for detailed information on any or all of these products. Free samples on request.

PRESSTITE
SEALING COMPOUNDS

PRESSTITE DIVISION
AMERICAN-MARIETTA COMPANY

K A P

3740 CHOUTEAU AVENUE • ST. LOUIS 10, MISSOURI



DAM EQUIPMENT -BIG WITH YUBA

From forebay to tailrace – Yuba takes the complete responsibilty – through design, fabrication and erection of steel equipment in hydro, flood control and water supply projects.

Call on Yuba for bridge and gantry cranes, hoists, intake, spillway and draft tube gates, bulkheads, trashracks and rakes, penstocks and liners, valves, structural steel, rebar, and other engineered steelwork.

Whether it's a single giant butterfly valve or the complete job responsibility, Yuba is equipped to work with contractors from design to erection of the fabricated steelwork required – everything from forebay to tailrace. When Yuba handles the complete package responsibility, both the contractor and the user are relieved of the problems of coordinating production, delivery and installation. Decades of experience, know-how of skilled personnel, and large, fully-equipped production facilities, are your assurances that specifications and schedules will be met, however complex the job, whatever the job location. Ask for Bulletin No. HY-51, describing equipment and services, or ask for a sales engineer to call.

YUBA

specialists in hydroelectric steelwork

YUBA MANUFACTURING DIVISION • *Benicia, Calif.*
YUBA-BEDFORD DIVISION • *Bedford, Ind.*
YUBA CONSOLIDATED INDUSTRIES, INC.

Sales Offices in Atlanta • Buffalo • Chicago • Cleveland • Houston • Los Angeles • New York • Philadelphia • Pittsburgh • San Francisco • Seattle

Labor

Engineering Unionism: New Twist

- **Drive for a new national federation of engineer unions may cave in as affiliation with AFL-CIO gains increasing favor.**
- **Reason: AFL-CIO is tending to pay more heed to the professional man's interest in identity, status and advancement.**

The AFL-CIO may be laying the groundwork for a significant breakthrough into the unionization of engineers as well as technicians.

A current indication is the turn of events in the ill-fated efforts to organize the Engineers and Scientists Guild, which would have been a national federation of independent unions for engineers, scientists and allied workers. Present indications are that ESG died aborning.

Charles Hall, interim president of ESG, now thinks effective unionism lies in another direction and is urging the members of his Engineers Association to affiliate with James Carey's International Union of Electrical Workers, AFL-CIO. EA, which is certified by the National Labor Relations Board, is a union of engineers and technical employees at the Sperry Gyroscope Co., a Long Island, N. Y., division of Sperry Rand Corp.

In mid-March, EA's Executive Committee approved the proposed affiliation. Most of the committee members are professional men with engineering degrees. And last week, EA's Representatives Council, which is comparable to a stewards committee, took similar action. The vote was 3 to 1. The proposal is now headed for an EA membership vote, but the date has not been set.

These developments represent a radical departure from EA's previous approach to a national union (ENR Feb. 27, 1958, p. 94) and have been brought about by structural changes now shaping up within the AFL-CIO. The changes are designed to preserve the autonomy and identity of engineers and to promote their professional interests.

For 14 years, the association has been one of the leaders in the tortuous search for a national organization free from management influence and combining effective collective bargaining with promotion of professional status (ENR Apr. 23, 1959, p. 30).

Throughout its stormy affiliation with Engineers and Scientists of America and its subsequent efforts to launch ESG, EA has shied away from trade union affiliation. The reason, Mr. Hall says, is that EA members felt that they could, in this way, best "regain" the professional status that had "deteriorated" under the aegis of the technical societies. For however odd it may sound to the uninitiated, engineering unions are as interested as the professional societies in furthering professional recognition.

Groups within the AFL-CIO have become increasingly aware of this, and are promoting evolutionary changes in the federation to attract engineers. Much of the impetus has come from the work force changes that are driving unions into the white collar field, as the relative strength of blue collar workers grows smaller.

There are two significant trends in the federation. Because of the nature of the trends, the EA developments may be more than a flash in the pan for engineering unionism generally.

- A Washington conference sponsored by the AFL-CIO Industrial Union Department last year and a Harvard seminar held this year have strengthened the AFL-CIO belief that engineers, as well as other professional and technical workers, can be organized—if the AFL-CIO changes its traditional approaches. This, in turn, has encouraged the IUD and its affiliates to explore the types of structural changes that might be made to allow for the engineers' interest in identity, status and advancement.
- At the top, there is an IUD committee at work on the problems of professional and technical workers. These are problems that may go beyond the scope of any one union. They include a definition of professional standards, full use of professional skills, broader exchange of experience and wage data, educational problems of scientists and engineers, and the special needs of workers who seek professional identification.

The IUD has simultaneously stepped up its activities and appointed two new directors, one administrative and one organizing. Mr. Carey, incidentally, is second in command of the IUD under Walter Reuther.

Similar developments are occurring at the international and local levels.

The IUE, for example, has a similar study committee and may set up an International Engineering Council, staffed by engineers. Present prospect of such a council is largely the result of prodding from the IUE's District 4, with which EA will be affiliated if the membership votes approval.

District 4 embraces IUE locals in upper New Jersey and lower New York State. It has long been active in white collar organizing and has been giving increasing emphasis to engineers. Vice President George Collins claims it has a large number of professional engineers among its members. Present engineering affiliates include Arma, Ford Instrument and Ward Leonard, two of which are former ESA affiliates.

District 4 has established a Salary Division for white collar workers. Engineers have been active in the division, according to Mr. Collins. District 4 is now considering splitting the division to form an Engineering Council to serve the interests and needs of engineers.

Walter Reuther's United Auto Workers Union has made somewhat similar changes in its structure and has combined these with changes in its contract procedures.

A collateral development in some of the IUD affiliates is the formation of conference boards that help correlate and coordinate the common interests of sister locals and of similarly situated locals of different internationals.

EA leaders hope that from the AFL-CIO changes will emerge a number of pyramids of Engineering Councils in different affiliates, all tied together by a common Engineering Council at the departmental level. The councils would be run by and for engineers. This would give engineers the combined advantages of horizontal and vertical unionism and the organizational strength of the AFL-CIO without loss of the identity that has been sought outside the federation.

EA leaders feel assured that these structural changes will become realities.

(*Turn the page*)

They have explained the common organization that may tie together all bona fide engineering locals in every AFL-CIO international this way:

"It is envisioned that this body will ultimately speak for engineering and set up a national center for correlation of materials, publication of statistics, a newspaper, and general organizing of engineering employees. Also, such a council will be able to provide Washington with legislative representatives to give the employed engineer a voice in the Capitol."

Mr. Hall personally hopes the end result may eventually make possible the formation of an effective international union of engineers within the AFL-CIO.

Meanwhile, the National Society of Professional Engineers has strengthened its opposition to the unionization of engineers.

It reaffirmed its belief that professionalism and unionism are imcompatible, and has, as a matter of policy, become officially concerned with the unionization of engineering technicians.

NSPE is now pledged to assist technicians who resist unionization, when invited to do so and when the unionization of technicians could adversely affect the interests of professional engineers.

Antitrust Laws Applied To Labor Union Demands

The U. S. Supreme Court's handling of an antitrust case last week may open up new vistas for contractors in the application of antitrust laws to labor.

The court upheld a lower court ruling that demands of local butchers unions for a labor contract clause setting the opening and closing times of a store amounted to an illegal conspiracy.

Court's reasoning was that the immunity which unions enjoy does not attach to activities that affect management prerogatives rather than the rights of labor.

"An employer has the right and it is his duty, if he is to survive commercially," the court said, "first to determine the needs of the public, second to provide a time, a place, and facilities for meeting those needs, and third to provide, under the terms of (federal law), the services of employees to accomplish the foregoing objectives. The rights of labor attach only to the third, and if any effort is made by labor to infringe rights of the employer in the first or second field, it is not shielded from the sword of the antitrust laws."

Case involved the Jewel Tea Co. in Chicago.

The Teamster Tangle Thickens

Judge Letts, supervisor of teamster house cleaning, faces collapse of the monitor system he set up

Efforts to clean up the teamsters union are now snarled in a mass of litigation that perhaps only a Solomon can untangle.

For over two years, opponents of James R. Hoffa within the Eisenhower Administration, Congress, the AFL-CIO and the teamsters have come to rely on the teamster court-appointed board of monitors as the most likely force to unseat the president of the big trucking union. In that period, the monitors have assumed the authority and the apparent determination to displace the Detroit labor leader on charges of corruption. This, perhaps, may prove to be their undoing.

Within the past few weeks, the monitor system has erupted into a series of legal entanglements, charges and countercharges until, today, it is threatening to explode out of existence.

Some curious changes in sentiment by former monitor opponents to Mr. Hoffa's stewardship of the teamsters union have helped to derail the monitors' case against the resilient labor leader. It is a case that has been building up, slowly, for many months and is scheduled to reach the court room of Federal Judge F. Dickinson Letts on April 27.

On that date, Monitor chairman Martin F. O'Donoghue is slated to begin his charges against Mr. Hoffa for his part in a Florida real estate venture which, says Mr. O'Donoghue, Mr. Hoffa backed with the "mis-use" of teamster treasury funds. This is only the first of a series of complaints against Mr. Hoffa that Mr. O'Donoghue claims are serious enough to warrant his removal as provisional president.

At this point, the date and the case are the only definitely scheduled events for the future.

It is an open question whether Mr. O'Donoghue will have any support from the other two monitors or, indeed, whether there will be any other monitors at all.

In a rapid sequence of events that started several weeks ago, monitor Lawrence T. Smith, who represented the rank-and-file plaintiffs in challenging Mr. Hoffa's right to be teamster president, first shifted his voting alignment and was subsequently removed by Judge Letts. Mr. Smith, who had normally voted with Mr. O'Donoghue to take the anti-Hoffa charges into Judge Letts' courtroom, reversed his position recently to charge that Mr. O'Donoghue was out to "get Hoffa" instead of concentrating on democratic procedures within the union.

Judge Letts, who has supported Mr. O'Donoghue's position all along, then removed Mr. Smith as monitor when the attorney would not resign.

Former F.B.I. agent Terence F. McShane has been named Mr. Smith's successor. Mr. Smith is appealing.

Along with the shift in Mr. Smith's sentiments, monitor Daniel Maher, representing the teamsters on the three-man board, resigned. Immediately, Mr. Hoffa submitted the name of William Buffalino, head of Detroit teamster Local 985, as Mr. Maher's successor. Mr. Buffalino had been named by the McClellan committee as an associate of racketeers in his Detroit juke box local.

Judge Letts refused to accept Mr. Maher's resignation.

As a final touch, the original rank-and-file teamsters who started the suit against Mr. Hoffa fired their own attorney, Godfrey Schmidt, who, along with Mr. O'Donoghue, has been a main opponent of Mr. Hoffa. They charged, as did Mr. Smith, that Mr. Schmidt, too, just wanted to "get Hoffa" and not clean up the union.

The whole matter was tossed into the lap of Judge Letts who was left to decide whether to continue dealing with Mr. Schmidt, as attorney for the plaintiffs, on the grounds that the suit is a "class" action and not within the sole jurisdiction of the plaintiffs.

If Judge Letts goes ahead with the April 27 hearings, no matter what the status of the monitor group, Mr. Hoffa will face a long trial. Mr. O'Donoghue has a mass of material collected in an attempt to show that Mr. Hoffa must be replaced before the union can be cleaned up.

However, the monitor momentum that had been gained in the campaign to unseat Mr. Hoffa has apparently been lost in the entanglements—and in the shifts of former anti-Hoffa forces into positions that correspond with his.

As part of Mr. Hoffa's shift to the offensive, he asked Judge Letts late last week to permit the teamsters to call an immediate international union convention so that he could be re-elected without the court ties. In the request, the teamster union agreed to abide by election rules set up by the court and the Landrum-Griffin law.

Plumbers Union Quits Industrial Union Group

The withdrawal of the plumbers union from the Industrial Union Department of the AFL-CIO (ENR Mar. 24, p. 57) does not amount to a clean administrative break between the craft and industrial unions nor does it affect the building trades' affiliation with the parent AFL-CIO.

Four of the building trades unions are still members of the IUD to the extent of their industrial representation. They are the boilermakers, laborers, electrical workers and marble polishers. Gordon Freeman, international president of the electrical workers, is still a member of the IUD Executive Committee.

The plumbers' withdrawal, effective last week, followed a recent heated discussion in the IUD Executive Committee. Bone of contention was building trades' participation in Construction Industry Joint Conference efforts to promote maintenance by contract (ENR Feb. 18, p. 141). Plumbers' President Peter T. Schoemann, who is a member of the IUD Executive Committee, said he was asked to leave the room while the matter was discussed.

"We desire only to avoid any recurrence of this unfortunate affair so that in the future if the department's Executive Committee desires, for example, to discuss matters involving the building trades, as the committee undoubtedly will, then they may do so more freely without the embarrassment of my presence or the need to ask me to leave," Mr. Schoemann said, in explaining the secession.

The IUD reports that the operating engineers and carpenters had been IUD members, but withdrew for "no special reasons," and that the sheet metal workers applied for membership in 1955, but never joined.

Electrical Workers Win A 20-Cent Wage Increase

A one-year labor contract granting a 20-cent package increase to electrical workers may set the pattern for wage settlements with 20 other building trades unions now negotiating in the Buffalo, N. Y., area.

Members of IBEW Local 41 will receive a 10-cent hourly wage increase and payment of another 10 cents an hour into a health and welfare fund. The contract is effective May 1.

The contract affects 900 electrical workers in commercial, industrial and residential construction work. It was negotiated with the local association of electrical contractors.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record
P.O. Box 12, New York 36, N. Y.

Bids: April 12, 1960.

Venturi Meters

CONTRACT 458

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, April 12, 1960, for Contract 458, for furnishing, testing and delivering stainless steel venturi meters, together with their instrument assemblies and appurtenances, complete in every respect and ready for installation, all as set forth in the specifications. One 143-inch by 102-inch venturi meter and one 24-inch by 18-inch venturi meter will be required for the Release Water Works at the Cannonsville dam, and one 108-inch by 72-inch venturi meter will be required for the Outlet Works of the West Delaware tunnel.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of fifteen thousand dollars ($15,000.00), for the proper execution of the Contract.

Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in the Secretary's office, Room 1312, at the above address, upon application in person or by mail, by depositing the sum of $5.00 for each pamphlet. Within 30 days following the award of contract or rejection of bids the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars apply at the office of the Chief Engineer, at the above address.

ARTHUR C. FORD, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; BETTY COHEN, Acting Secretary.

Bids: May 27, 1960.

City Public Safety Building Rochester-Monroe County Civic Center

ADVERTISEMENT FOR PROPOSALS

Notice is hereby given that sealed proposals for the City Public Safety Building, for the Rochester-Monroe County Civic Center will be received by the Rochester-Monroe Civic Center Commission at Room 36 in the City Hall until 11:00 o'clock A.M. Eastern Daylight Time on May 27 (twenty-seven) 1960, at which place and hour they will be publicly opened and read aloud.

The proposals shall be for furnishing all labor, materials, insurance, bonds, equipment, facilities, transportation and services necessary for and reasonably incidental to the completion of all work for the above project in accordance with the Drawings, Specifications and other Contract Documents prepared by Bohacket and Flynn, Architects.

The work is divided into the following separate contracts, each to include portions of the complete work, as follows:

General Construction Work
Heating & Ventilating
Plumbing Work
Electrical Work
Elevator & Escalator Work

These plans, specifications and other contract documents may be examined and copies thereof may be obtained at Room 36, in the City Hall, Rochester, New York. One copy of the said documents may be obtained upon payment of One Hundred Dollars ($100.00) deposit; any person, firm or corporation submitting a bid to the City on this project and returning such copy in good condition within thirty (30) calendar days following the opening of the Proposals will be refunded One Hundred Dollars ($100.00). Reimbursement of Fifty Dollars ($50.00) will be made to any person, firm or corporation not submitting a bid to the City of Rochester on this project and returning other copies of the plans and specifications in good condition within thirty (30) calendar days following the opening of Proposals.

Rochester-Monroe Civic Center Commission reserves the right to reject any or all Proposals and to waive any informalities, should the best interest of the Commission thereby be promoted.

Proposals shall be made on the form provided in the Contract Documents, and each proposal shall be accompanied by a certified check made payable to the Rochester-Monroe Civic Center Commission, in an amount not less than five per cent (5%) of the total amount of the proposal, conditioned that the bidder will execute the Contract and deliver the required insurance and Performance Bond for the proposed work within ten (10) calendar days after the date of written notice that his proposal has been accepted.

For proposals with total amounts in excess of $200,000, a bid bond in the amount of five (5%) per cent of the amount of the proposal, in proper form, executed by a surety company acceptable to the Rochester-Monroe Civic Center Commission, will be accepted in lieu of the aforesaid certified check.

The work involved in this project is not financed or aided by any Federal or State agency.

A bidder may not withdraw his proposal within forty-five (45) calendar days after the opening of proposals, but may withdraw his proposal at any time prior to the scheduled time for the opening of proposals.

Kenneth E. Punnett
Purchasing Agent

Bids: April 21, 1960

Newark Airport Extension of Parking Lot No. 3

THE PORT OF NEW YORK AUTHORITY

CONTRACT O & M-578

Sealed proposals for the construction of paving and utilities for extending Parking Lot No. 3 at Newark Airport will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 A.M. Thursday, April 21, 1960 at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt will be issued. The receipt is then to be delivered to the Department of Purchase and Administrative Services, who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, April 7, 1960

OFFICIAL PROPOSALS

Bids: April 21, 1960.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., eastern standard time on the 21st day of April 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No 1, G L Nickerson, District Engineer 353 Broadway, Abany 1 New York						
Albany	FASS 60-4 PSC 18538	Fuller Road C R 156, Elm of Grade Crossng of the N.Y.C. Railroad with the Fuller Road, C.R 156 Project S-568(1)	1.95	9" Cem Conc Pavt 40', 48' & Var=1 72 Miles; Asph Conc=0.23 Mi.; RRGS-NYCRR-Plate Girder Span 62.0'	$93,000 Plans $5	$1,691,000
Rensselaer & Washington (Rte. 40)	FARC 60-27	Schaghticoke-Middle Falls, Pt. 1, S H 8350 Schaghticoke-Middle Falls Pt. 2, S.H 8350 Project F-504(11)	7.98	Asphalt Concrete	$84,000 Plans $5	$1,531,000
Rensselaer (Rte. 67)	RC. 60-43	North Hoosick White Creek Station S.H 1792	4.05	Asph. Conc.=4.03 Mi Misc. Work=0.02 Mi.	$8,000 Plans $5	154,000
Rensselaer (Rte. 7)	R.C. 60-42	Whitehouse Bridge-Vermont State Line, S.H. 1426	3.92	Asphalt Concrete	$7,000 Plans $5	133,000
DISTRICT No. 2, L. Ketchum, District Engineer 109 No. Genesee Street, Utica 1 New York						
Herkimer (Rte. 28)	FARC 60-22	Richfield Springs-Getman Corners, Pt. 2, S.H 1818 Project S-493(1)	6.17	Asph. Conc Type 1A=6.12 Mi. Misc. Work=0.05 Mi.	$51,000 Plans $5	928,000
Madison & Oneida (Rte. 31)	FATS 60-5	Oneida Lake-South Bay, Oneida-South Bay, Pt. 2, S.H. 1361; Canastota-South Bay, S.H. 812; Oneida Valley-State Bridge, Pt. 1, S.H. 8367; Oneida Valley-State Bridge, Pt. 2, S.H 8367; State Bridge-Verona Sta., SH. 8432 Project F-540(3)	7.12	Traffic Signs	$350 Plans $5	6,500
DISTRICT No 3, E E Towlson, Acting District Engineer, 333 E Washington Street, Syracuse, New York						
Cayuga (Rte. 34)	FARC 60-34	Fleming-Scipio, Pt 2, S.H. 1327A Venice Center-Genoa, S.H. 1414 Project F-1155(3)	8.92	Asphalt Concrete	$23,000 Plans $5	421,000
Cayuga (Rte. 34)	FARC 60-36	Genoa-North Lansing, S.H. 1566 Project F-1155(1)	4.95	Asph. Conc., Type 1A Conc. Box-Twin Span 15' Each	$47,000 Plans $5	830,000
Cayuga (Rte. 34)	FARC 60-1	Weedsport-Cato, S.H. 686 Project F-1114(6)	0.48	Grading & Drainage	$13,000 Plans $5	242,000
Tompkins (Rte. 13)	R.C. 60-47	Cayuta-Newfield, S.H. 5474 Ithaca-Newfield, S.H. 5214	1.85	Asphalt Concrete	$3,000 Plans $5	53,000
Wayne (Rte. 31)	FARC 60-37	Pittsford-Palmyra, Pt. 4, S.H. 1551 Project F-744(7)	1.87	Asphalt Concrete	$5,500 Plans $5	100,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Erie (Int Tour Rte. 190)	N.T. 60-1	New York State Thruway, Niagara Section Sub N-8S (South Grand Island Bridge and Approaches)	1.40 (0.34 Acc)	9" Cem. Conc. Pavt. 25' & Var.=1.26 Mi. (Plus 0.34 Mi Conc Access); Misc Work=0 14 Mi ; Cant Deck Truss & Gird Br 27 Sp 3383 1' Toll Plaza & Facilities	$435,000 Plans $100 Full Size Only	7,925,000
DISTRICT No 6, J H Thomas, District Engineer, State Office Bldg , 30 West Main Street, Hornell, New York						
Allegany (Rte. 21)	R C 60-35	Andover-Alfred Station-Almond, S H 5502	6.61	Asph Conc =4 61 Mi Misc Work=2 00 Mi	$22,000 Plans $5	397,000
Schuyler (Rte. 224)	FARC 60-31	Montour Falls-Alpine, Pt 1 S H 1232; Montour Falls-Alpine, Pt 2 S H 999; Odessa-Mecklenburg, Pt 1 S H 1655 Project F-FG-479(15), F-400(6)	4.55	Asph Conc =4 54 Mi ; Misc Work=0 01 Mi ; Cant Welded Girds Comp 3 Pc 290 5' Total; R R G S Single Span Pl Gird 84 2'	$116,000 Plans $5	2,107,000
Steuben	FASS 60-22	Purdy Creek-Shovel Hollow C R 28 Project S-541(1)	0.61	Asphalt Concrete	$7,000 Plans $5	120,000
DISTRICT No 7, R W Sweet, District Engineer, 444 Van Duzee Street, Watertown, New York						
Jefferson (Rtes. 11, 12, 37)	T C 60-2	Watertown-Clayton, Pt 1 S H 5140 Watertown-Theresa, Pt 1 S H 565 Watertown-Philadelphia, Pt 1 S H 5651	....	Traffic Signals	$500 Plans $5	$8,500
District No 8, K G Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Columbia	FASS 60-3	Old Chatham-Rayville-Brainart, C R 78 Project S-569(1)	4.67	Calcium Chloride Treated Stabilized Gravel	$30,000 Plans $5	548,000
Columbia & Dutchess	R C 60-29	24 various Highways in District 8 on Routes 9G, 82A, 343, 82, 52	91.2	Subsealing Cem Conc Pavt	$6,000 Plans $5	106,000
Orange & Ulster	R S 60-28	19 Various Highways in District 8 on Routes 6, 9W, 17A, 32, 52, 84, 94, 207, 209, 210	83.63	Subsealing Cem Conc Pavt	$6,000 Plans $5	103,000
Westchester (Int. Tour Rte 87)	FITATS 60-1	New York State Thruway Southern Westchester Conn Sub 11 (N Y City Line-Tuckahoe Road) Hudson Section-Sub. 10 (Tuckahoe Rd. Tarrytown) Project I-87-2(15)	11.00	Traffic Signs	$9,000 Plans $5	159,000
DISTRICT No 9, J C Frederick, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Int. Tour Rte. 81)	FITS 60-4	Interstate Route 595 S H No Fish 60-3P (Pennsylvania State Line to Route 17 at Five Mile Point) Project I-81-1(7)	7.49 (3.54 Acc)	Traffic Signs and Delineators	$1,600 Plans $5	28,000
Broome (Int. Tour Rte. 81)	FISH 60-3P	Interstate Route 505 Pennsylvania State Line-Five Mile Point (Penn -N Y State Line to Sunset Drive) Project I-81-1(6)	7.49 (1.24 Acc)	9" Cem. Conc Pavt 2 @ 24' Var =7 29 Mi ; Misc Work=0 20 Mi (Access Cem Conc Pavt 0 77 Mi ; Asph Conc 0 47 Mi)	$145,000 Plans $5	2,645,000
Broome (Rte. 79)	R C 60-48	River Road-Windsor, Pt 2, S H 213; Ouaquaga Road, S H 212; Harpursville-Ouaquaga, S H 1106	4.77	Asphalt Concrete	$11,000 Plans $5	187,000
Delaware (Rte. 10)	FARC 60-32	Walton Village: Delaware St , S H 9268; Rock Rift-Colchester, S H 1271; Colchester-Delancey, S H 1272 Project F-845(5)	5.56	Asphalt Concrete	$70,000 Plans $5	1,187,000
Delaware (Rel. Rte 10)	BWS 60-2	City of New York: Board of Water Supply Road No 1 (Cannonsville Reservoir)	6.04 (1.23 Acc)	Asph Conc =7 17 Mi Misc Work =0 10 Mi	$190,000 Plans $5	3,436,000
Delaware (Rte. 30)	R C 60-40	Roxbury-Grand Gorge, S H 5459	5.66	Asphalt Concrete	$14,000 Plans $5	235,000
Sullivan (Rte. 17)	FATS 60-6	Monticello-Liberty, Pt 1 S H 5035 Monticello-Liberty, Pt 2 S H 5322 Project F-336(21); F-495(15)	8.02 (7.03 Acc)	Traffic Signs and Delineators	$3,000 Plans $5	51,000
DISTRICT No 10, M E Goul, District Engineer, 325 W Main Street, Babylon, L I , New York						
Suffolk	SSPRC 60-1	Southern State Parkway (Captree State Parkway to Heckscher State Parkway)	1.37 (1.43 Acc.)	8" Cem Conc. Pavt. 2 @ 37.5' & Var.=1.28 Mi.; Misc. Work=0.09 Mi.; Acc. 8" Cem. Conc. Pavt.= 1.43 Mi; 5 Hwy. Gr. Seps. 2 Conc. Rigid Frames 70' & 67' 2 Comp. WF Beams 67.8' & 73.4'; 1 Plate Girder 109' Span	$195,000 Plans $5	3,557,000

(*Continued on following page*)

OFFICIAL PROPOSALS

(Continued from preceding page.)

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: April 20, 1960.

Notice To Road and Bridge Contractors

STATE OF RHODE ISLAND AND
PROVIDENCE PLANTATIONS
DEPARTMENT OF ADMINISTRATION—
DIVISION OF PURCHASES

Sealed Proposals addressed to the State Purchasing Agent, Rhode Island Department of Administration, Division of Purchases, 125 State House, Providence 2, Rhode Island, will be received until 11:30 A.M. on the 20 day of April 1960, at which time they will be opened and read in public.

> R. I. Contract No. 6053, R. I. Federal-Aid Project No. 1-95-2 (3) 36, County of Providence, Interstate Route 95, Providence, Rhode Island. Construction consists of the Interstate Route 95 starting near Public Street on the west side of Allens Avenue and proceeds northwesterly to the existing freeway in the Hayward Park area as shown on the Plans, including Lanes "A" and "B" of the divided highway, Lanes "J", "K" and "D" in the vicinity of the Hayward Park area, connecting Ramp Nos. AR-1, AR-2, BR-1 and CR-1, Service Road Nos. 1, 2 and 3, steel stringer and concrete deck bridge Nos. 531 and 533 through 537, prestressed concrete girder bridge No. 538, prestressed concrete slab bridge No. 539, roads, paving, walks, abutments, piers, embankments, curbing, utilities, together with excavation, drainage facilities, and all other appurtenant parts of the work, complete and accepted.

Bids for the above work must be made on blanks furnished by the Department of Public Works, Division of Roads and Bridges. Plans, Specifications and Special Provisions may be examined at Room 125 State House or Room 224 State Office Building, Providence, Rhode Island, on and after April 1, 1960, every week day except Saturdays and holidays, between the hours of 8:30 A.M. and 4:30 P.M. Blanks for submitting Proposals may be obtained through the office of the State Purchasing Agent at the address above noted. A deposit of $350.00 shall be made for each set of contract documents which will be refunded if Plans and Specifications are returned in good condition within two weeks after the opening of bids.

A certified check or bid bond payable to the State of Rhode Island, in the amount of $150,000.00 must be furnished by each bidder. This Proposal Guaranty will be returned after the contract has been executed unless forfeited in accordance with the stipulations in the Proposal. A performance bond of one hundred (100) percent of the contract price with a satisfactory surety company will be required of the successful bidder. The Division of Purchases reserves the right to reject any or all bids.

FEDERAL REQUIRED CONTRACT PROVISIONS: The attention of prospective bidders is called to the fact that this project is to be bid upon and the contract executed under the rules and regulations for carrying out the provisions of the Federal-Aid Road Act, as amended and supplemented, and the Required Provisions for Federal-Aid Contracts.

WAGES OF LABOR ON INTERSTATE HIGHWAY PROJECTS: The prevailing rate of wages for laborers and mechanics employed by contractors or subcontractors on the initial construction of highway projects on the Interstate System, authorized under the Federal Highway Act of 1956 shall be paid wages at rates not less than those prevailing on the same type of work on similar construction in the immediate locality as determined by the United States Secretary of Labor in accordance with the act of August 30, 1935, known as the Davis-Bacon Act, under Decision No. U-18, 225, which is part of the contract.

Title 37, Chapter 13 of the General Laws of 1956, requires that "the contractor to whom the contract is awarded and any subcontractor under him shall have ordinarily paid the prevailing rate of per diem wages and shall continue to pay the prevailing rate of per diem wages and the general prevailing rate for regular, holiday, overtime and other working conditions to all workmen needed to execute the contract or work". The schedule of prevailing wage rates of per diem wages in the locality in which the work is to be performed for each craft, mechanic, teamster, laborer or type of workman needed to execute the contract or work is on file in the office of the Rhode Island Department of Labor.

On State, City and Town projects, Title 37, Chapter 13, Section 14 of the General Laws of 1956, requires that Rhode Island citizens be given preference in employment.

SUBLETTING OR ASSIGNING THE CONTRACT: The attention of bidders is directed to the Standard Specifications and Special Provisions covering subletting or assigning the contract.

DEPARTMENT OF ADMINISTRATION
DIVISION OF PURCHASES
By R. Henry Field
State Purchasing Agent

District of Columbia—Highway Construction—Dept. of Hwys. & Traffic, March 25, 1960. CONSTRUCTING THE DISTRICT OF COLUMBIA ABUTMENT FOR THE THEODORE ROOSEVELT BRIDGE, CONTRACT NO. 2, Federal Aid Interstate Project No. I-66-1(6)0, Invitation No. C-60125-H, consisting of approx. 3,122 cu. yds. Class B Concrete in footings; 2,698 cu. yds. Class B Concrete in Abutment Wall; 20,100 Lin. Ft. Concrete filled pipe piles; 1,188 Cu. Yds. Regular coursed, dressed dimension granite masonry, including backing concrete; and 1,670 cu. yds. Broken course dressed granite masonry, including backing concrete. Wage Rates have been predetermined by Labor Dept. "Pre-bid meeting will be held to answer questions bidders may have on the project on April 12, 1960, 9:00 A.M., E.S.T., Room 500, District Building, 14th and E Sts., N.W., Wash. 4, D. C." Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Penn. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 3:00 PM, EST, April 21, 1960, in Room 424, 499 Penn. Ave. N.W.

U. S. Government

Department of Commerce, Bureau of Public Roads, April 1, 1960. SEALED BIDS will be received at the office of Mr. C. H. Buchanan, Division Engineer, Bureau of Public Roads, First National Bank Building, Florence, Alabama, until 10:00 a.m., C.S.T., May 3, 1960, for Project 3D22-3E8, Natchez Trace Parkway, Lee, Pontotoc and Chickasaw Counties, Mississippi. Bituminous Concrete Pavement, Stabilized Shoulders, and other work from US Highway 45 26.987 miles to Mississippi Highway 32. The approximate quantities of the more important items are: 3,200 tons Gravel Material for Stabilized Shoulders and 54,000 tons Hot Bituminous Concrete Pavement. Minimum wage rates have been fixed as required by law. Plans, specifications and bid forms are available upon request at the address given above or Bureau of Public Roads, 1440 Columbia Pike, Arlington 4, Virginia. F. W. Cron, Regional Engineer.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5297) will be received at Albuquerque, New Mexico, until 10 a.m., Mountain Standard Time, April 28, 1960, for furnishing labor and materials for channelization of the Rio Grande, Belen Area, Unit 2, Belen Division, Middle Rio Grande Project, New Mexico. Location near Belen, New Mexico. Principal items are 558 acres clearing; 240,000 cu. yds. excavation for pilot channel; 63,200 cu. yds. embankments; 6,800 units—Metal jack units for jetty lines; and other work. Completion time 360 days. For particulars, address Bureau of Reclamation, P. O. Box 252, Albuquerque, New Mexico; P. O. Box 1609 Amarillo, Texas; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5307) will be received at Klamath Falls, Oregon until 10 a.m., Pacific Standard Time, May 17, 1960, for furnishing labor and materials for earthwork and structures for canal, lateral, and drains, Sump 2, Contract Unit 2, Tule Lake Division, Oregon-California, Klamath Project. Location near Tule Lake, California. Principal items are 316,000 cu. yds. excavation; 31,000 cu. yds. earth lining; 70 cu. yds. concrete in structures; 1,534 lin. ft. corrugated-metal pipe; various slide gates and metalwork; and other work. Completion time 200 days. For particulars, address Bureau of Reclamation, P. O. Box 312, Klamath Falls, Oregon; P. O. Box 2511, Sacramento 11, California; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal Advertising is $2.40 per line (or fraction) per insertion.

COPY RECEIVED: up to 10:30 A.M. Friday for issue out following Thursday subject to space open for last minute ads.

SEND COPY: to Official Proposal Division, Classified Adv. Div., P. O. Box 12, New York 36, N. Y.

OFFICIAL PROPOSALS

Bids: April 21, 1960

Port Authority Airports Coal Tar Pitch Emulsion Treatment of Pavement

THE PORT OF NEW YORK AUTHORITY
CONTRACT O & M-572

Sealed proposals for furnishing and applying coat tar pitch emulsion seal coating on pavement at LaGuardia Airport, New York International Airport, Teterboro Airport, and Newark Airport will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 A.M. Thursday, April 21, 1960, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt will be issued. The receipt is then to be delivered to the Department of Purchase and Administrative Services, who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forefeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, April 7, 1960

Bids: April 26, 1960

La Guardia Airport Rehabilitation of the Easterly Apron

THE PORT OF NEW YORK AUTHORITY
CONTRACT LGA-310.205

Sealed proposals for the rehabilitation of the easterly apron and adjacent paved areas at LaGuardia Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 26, 1960, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, April 7, 1960

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5305) will be received at Yuma, Arizona, until 10 a.m., Mountain Standard Time, May 11, 1960, for furnishing labor and materials for earthwork, concrete lining, and structures, Wellton-Mohawk Main Conveyance Channel, Station 2377+05 to Station 3304+22.59, and Snyder Ranch Conveyance Channel for Wellton-Mohawk Drainage System, Wellton-Mohawk Division, Gila Project, Arizona. Location east of Yuma, Arizona. Principal items are 335,000 cu. yds. excavation; 240 cu. yds. concrete in structures; 10,600 cu. yds. concrete in channel lining; 6,829 lin. ft. concrete pipe, 18 to 42-inch; and other work. Completion time 360 days. For particulars, address Bureau of Reclamation, P. O. Bin 151, Yuma, Arizona; P. O. Box 427, Boulder City, Nevada; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

OFFICIAL PROPOSALS

Bids: April 25, 1960

City of Sherrill, New York Sewage Treatment Plant

Sealed proposals for construction of a Sewage Treatment Plant for the City of Sherrill, New York, will be received by the Clerk of the City Commission of the City of Sherrill, New York, at his office in the City Hall until 7:30 P. M. on April 25, 1960, and then will be publicly opened and read aloud.

Separate sealed proposals will be received for the following:

Contract No. 1—"General Construction"
Contract No. 2—"Heating and Ventilating"
Contract No. 3—"Plumbing"
Contract No. 4—"Electrical"

Construction of the Plant will include all treatment units, buildings, equipment, utilities, walks, drives, access roads, grading, landscaping, fencing, manholes, relocation of a portion of the outfall sewer, and everything required as set forth in the Contract Documents.

Information for Bidders, Plans and Specifications may be examined at the office of the City Clerk, City Hall, Sherrill, New York, or at the office of Stearns & Wheler, Civil and Sanitary Engineers, 99 Albany Street, Cazenovia, New York. Copies thereof may be obtained at the said office of the City Clerk upon deposit of $30.00 for each set (each set covers all four Contracts), to be held as security for their return, pursuant to law.

The City of Sherrill reserves the right to waive any informalities in or to reject all bids.

The final awarding of Contract is subject to the approval of the United States Department of Health, Education and Welfare.

Arthur F. Woodbury, Sr.
City Clerk, Sherrill, N. Y.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5300) will be received at Clinton, Oklahoma, until 10 a.m., Central Standard Time, May 18, 1960, for furnishing labor and materials for earthwork, structures, concrete pipe and steel pipe, Foss Aqueduct, Clinton Lateral, Bessie Lateral, Cordell Lateral, Washita Basin Project, Foss Division, Oklahoma. Location near Clinton, Oklahoma, in Custer, Washita, and Kiowa Counties. Principal items are 408,000 cu. yds. excavation; 50 miles of concrete pressure pipe lines; and other work. Completion time 800 days. For particulars, address Bureau of Reclamation, P. O. Box 84, Anadarko, Oklahoma; P. O. Box 1609, Amarillo, Texas; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

EMPLOYMENT OPPORTUNITIES

NATIONAL COVERAGE

ADDRESS BOX NO. REPLIES TO: Box No.
Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Equipment Superintendent: To organize and manage prevention, maintenance and repair of heavy construction equipment. Midwest location. P-4085, Engineering News-Record.

Wanted: Road Grader Operators. We are interested in securing two top road grader operators for work on state highway contracts in North Central Illinois. We will guarantee sufficient work for the entire 1960 season at union wages. Please contact P-4072, Engineering News-Record, as soon as possible.

Estimator—Expanding Philadelphia Contractractor has an opening for a man thoroughly experienced in competitive public bidding. Top pay and working conditions. Wingate Construction Company, 34 So. 17th Street, Phila., 3, Penna.

Civil Engineer—Registered Professional Engineer capable of performing engineering and administrative duties required of City Engineer. Salary open. Send resume of educational and work experience background and salary requirements to Mayor J. Fred Kinley, City Building, Corry, Pennsylvania.

Assistant to City Engineer—Capable of performing administrative and supervisory duties in connection with municipal public works program. Ability to handle survey and drafting duties also desirable. Salary open. Send resume of educational and work experience background and salary requirements to Mayor J. Fred Kinley, City Building, Corry, Pennsylvania.

Superintendent—Bureau Water And Sewers. Batavia, New York. Graduate in sanitary engineering from a university of recognized standing with some experience in municipal and related fields. Will be responsible for water treatment and distribution operations; sewage treatment facilities and pumping stations. Salary open. Send resume and application to City Administrator, City Hall, Batavia, New York.

Estimator—Heavy Construction. Expanding mid-west industrial, institutional commercial firm with nine state operation. Opening for man (25-35) thoroughly experienced in competitive public bidding. Must have take-off, price and sub-contract ability. Send complete resume. All applications held in strict confidence. Our employees know of this ad. P-3938, Engineering News-Record.

• POSITIONS VACANT

Assistant Town Engineer-Civil-Degree or some College preferred—age 20-30. Salary $4,900.00—$5,400.00. Small New England Town—population 9,000. Write, giving full resume and date available to P-4062, Engineering News-Record.

Job Superintendent—Mainly man experienced in Building work. At present have openings in various locations. Please submit complete resume with salary requirements to P-4028, Engineering News-Record.

Wanted—Project Engineers and Construction Superintendents: Long established midwest general construction firm anticipates openings immediately. Project engineers must be aggressive, tactful, familiar with material controls, owner and architect relations, processing of shop drawings, material samples, change orders, and other details necessary to properly schedule and coordinate material flow to jobsite. Engineering degree preferred but not mandatory. Construction Superintendents must be aggressive, cost conscious, and well experienced in reinforced concrete, structural steel, and masonry structures. Engineering background preferred but not mandatory. Applicants for either position should furnish complete resume of experience and education with salary expected in initial reply. P-3982, Engineering News-Record.

Experienced Draftsman, with minimum of 5 years recent highway drafting experience, for permanent opening in Chicago Office of established consulting firm. Send detailed resume, with salary requirements to P-3945, Engineering News-Record.

Chemical Plant Design Engineers Wanted. TVA has openings for engineers in the design of demonstration-scale plants and plant improvements for the production of phosphorus and phosphatic fertilizers and the production of ammonia, nitric acid, and nitrogen fertilizers. The annual entrance salary is $7150. The work location is Wilson Dam, Alabama, in the Tri-Cities area of Florence-Sheffield-Tuscumbia in northern Alabama. A bachelor of science degree or its equivalent in chemical, electrical, mechanical, or structural engineering with 3-5 years' experience in chemical plant design is required. All jobs carry automatic within-grade increases for satisfactory service, liberal vacation leave, sick leave, and retirement, hospitalization and insurance benefits. Write to: Tennessee Valley Authority, Employment Branch, Division of Personnel, Knoxville, Tennessee.

Concrete Paving Superintendent Opening for efficient operator, good organizer, knowledge of equipment and materials essential. Prefer middle age person. Salary commensurate with ability. Condon-Cunningham, Inc., 2324 Shore Crest Drive, Dallas 35, Ph FL 7-6537, Engineering News-Record.

(Continued on opposite page)

Draftsmen — Structural

Experienced checkers and detailers on structural shop drawings for bridges. Write stating age, education and experience. Drawing Room located in Metropolitan New York City area.

P-4039—Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ESTIMATOR

Heavy construction contractor, New York City area. Must have minimum of ten years experience in sewers, tunnels, bridges, etc. Capable of handling all phases from estimate to completion.
Send complete resume to:

P-4137, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

• *POSITIONS VACANT*

(Contiued from opposite page)

Engineering Superintendent—Major U. S. Company with permanent operation in Latin America has topflight opening for topflight engineer-administrator. Will direct all engineering activities—mechanical, electrical, construction in 8000 employee division. Must have experience in at least three of following: Mechanical maintenance, Irrigation-Drainage; Housing and road construction; Railroad equipment maintenance. Knowledge of Spanish desirable, not essential. One month vacation yearly, all relocation expenses paid. Send all background information and salary requirement first letter. P-4126, Engineering News-Record.

Estimator, Take-off man only for structural steel fabricator; experienced all types of structures. P-4113, Engineering News-Record.

Sales Engineer—Civil Preferred. Must have strong interest in sales, but experience not necessary. We are looking for several qualified men in 23-30 age group. Excellent opportunity for growth with large organization to work in construction specialty field. Salary plus liberal compensation. Automobile, expenses and many fringe benefits furnished. Send complete details. Strictly confidential. Write Johns-Manville Prod. Corp., Celite Division, 22 East 40th St., New York 16, N. Y.

Design Civil Engineer—Experience in Water Supply and Sewage Treatment, location, Michigan. State age, qualifications, experience and salary desired. P-4081, Engineering News-Record.

Division Sales Representative wanted by leading manufacturer of building construction machinery to work with distributors and their salesmen in eight Northeastern States. This territory represents large volume of sales over the years. Attractive salary, expenses and commission. Prefer home location Eastern Pennsylvania, New Jersey, Maryland area. Send complete resume and photo if possible first letter to Sales Manager, Box 72, Western Hills, Cincinnati 38, Ohio.

Manufacturer of Building Construction Machinery has position open in nine Midwestern States. This territory is producting a large volume of sales. Travel extensively. Attractive salary, expenses and commission. Home location Chicago-Davenport area. Send complete resume and photo if possible first letter. P-4146, Engineering News-Record.

• *SELLING OPPORTUNITY AVAILABLE*

Salesman construction equipment. Excellent opportunity with Minnesota distribution of broad line of heavy construction equipment. Attractive compensation & fringe benefits for experience, executive type salesman. Send details of age education & experience to: SW-4145, Engineering News-Record.

• *EMPLOYMENT SERVICE*

Better Positions—$6,000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 49 year old service connects you with best openings. You pay us only nominal fee for negotiations: This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars. R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo, N. Y.

• *POSITION WANTED*

Construction Superintendent. Experienced Hospitals, schools, banks, industrial, commercial buildings and high rise public housing. Quantity take-off, from bidding to final completion. PW-3868, Eng. News-Record.

EMPLOYMENT OPPORTUNITIES

NATIONAL COVERAGE

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch in measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

APRIL 18TH
ISSUE
CLOSES
APRIL 8TH

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of
ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

• *POSITIONS WANTED*

Electrical Supt. or assistant Supt. Foreign or Domestic. 20 yrs. exp. in heavy industry maintenance & construction. PW-4093, Engineering News-Record.

Executive (Female) Contract Manager, Attorney, Administrator, 15 yrs Legal-Construction Experience, Govt Contracts, Claims, Employed. PW-4033, Engineering News-Record.

Project Manager or Superintendent, construction of highways, air-ports or earth moving of any kind. Twenty five years experience, can furnish best of references. Will travel anywhere and am available now. PW-4069, Engineering News-Record.

Construction Engineer, 33, B.S.C.E. 8½ yrs. experience Industrial Construction with General & Mechanical contractors. Can estimate, buy material, select sub contractors negotiate with labor unions & owners, and supervise field construction. Would make a good Man Friday for construction company or construction department of industrial firm. Location preference Mississippi to Rockies. Will consider other areas. PW-4078, Engineering News-Record.

Construction Engineer, 54, Reg. (Pa., Ala.), BSCE, CE. Extensive Heavy, Hydro construction experience. Seeks position with engineer-constructor firm Virginia, South Atlantic States. PW-4079, Engineering News-Record.

Former Consultant, 54, Highly Productive, ample capital, seeks association with established engineering organization, New York area. P-4071, Engineering News-Record.

Superintendent with key men, good experience in all phases of general construction including bidding, moving-in, buying, ocean shipping, production in the Bahamas and Caribbean wants tough project in either area or in Africa or India after May 1. PW-4059, Engineering News-Record.

Superintendent-Estimator-Engineer, CE P.E. L.S. (NJ) experienced public works, utilities, bridges, paving desires position general contractor. PW-4032, Engineering News-Record.

Erection or yard foreman struct. steel 15 years exp. industrial bldgs. Largest tonnage jobs in country. Best references can take complete charge this part contractors work. Prefer midwest locations. Write P.O. Box 28, Paris, Illinois.

Estimator-Superintendent—15 years one Company. Thoroughly qualified to handle complete job bidding stage to completion. Sewage Disposal, Water Treatment, all types Heavy Construction. Will relocate to suit job. Best of references. PW-3913, Engineering News-Record.

Contracts Manager, Project Engineer, Age 41, direct charge of contracts administration, changes, estimating, negotiations and claims settlement. Over 20 years of varied engineering experience with strong mechanical background. Thoroughly competent in office management and field administration. Very good Spanish. Presently located in Europe. Prefer to remain in Europe or relocate in Latin America but open to offer. Available in 90 days. Resume on request. PW-3912, Engineering News-Record.

Highway Construction Superintendent: 20 years experience excavation, grading, etc. Assume full responsibility field and office. PW-3911, Engineering News-Record.

Waterfront—Heavy Construction—Buildings Licensed C.E., over 30 years experience in Design, Estimating, Coordination, Field and Office Supervision. Location immaterial. PW-3933, Engineering News-Record.

(Continued on page 111)

Immediate Opening

Building Construction
PROJECT MANAGER

Young, rapidly expanding ($70 million in active contracts) nationwide construction company wishes to discuss your qualifications if you have substantial successful experience as top project manager for general contractor on varied competitively bid individual complex projects (primarily governmental) exceeding $10 million and seek greater future opportunities with growing firm.

Exceptional opportunity to offer a top-flight man now and future potential in top managerial positions as Company adds branch office operations.

Mail complete and confidential resume to Director of Personnel

BLOUNT BROTHERS
CONSTRUCTION CO.

Home Offices / **79 Commerce Street**
Montgomery, Alabama

ARCHITECTURAL M. E. WANTED

Staff M. E. Architects' office. Experienced design, general M. E. for normal commercial, industrial structures. Profit sharing and benefits. Send resume and salary expected to

FULMER and BOWERS, *Architects*
341 Nassau Street, Princeton, N. J.

ESTIMATOR-ENGINEER

A fine job opportunity for an engineer with estimating and field experience. Opportunity includes quantity estimating, job expediting, checking shop drawings. Commercial, industrial and institutional buildings.

The Southern New England Contracting Co.,
66 Sanford Street, Hartford, Connecticut

FIELD REPRESENTATIVE

Trade Association has opening for graduate engineer with five to ten years experience in water utility or related field. Requires aptitude for technical sales promotion work. Travel within limited territory. Car furnished and all expenses reimbursed. Applicants should submit complete resume of experience to

P-4056, Eng. News-Record
520 N. Michigan Ave., Chicago 11, Ill.

CONSTRUCTION SUPERINTENDENT

Large sewers. Heavy construction contractor, New York City area. Must have minimum of fifteen years experience. Long established firm.
Send complete resume to:

P-4138, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CHIEF ENGINEER-GENERAL MANAGER

For young rapidly growing engineering organization specializing in petroleum, chemical, power plant, pulp, marine and structural.

Excellent opportunity for ambitious man looking for promotion, who is experienced in organizing and directing projects utilizing civil, mechanical, electrical and chemical engineers. Company does engineering work for associated companies acting in above fields.

Applicant must be able to plan, schedule and direct work and be cost conscious. Write in confidence to:

J. D. Park, Jr., *President*

ENGINEERING CONSULTANTS LIMITED

P. O. Box 279 **Saint John, New Brunswick, Canada**

San Francisco

Refinery-Chemical Division and Power-Industrial Division offers immediate employment opportunities for engineers capable of assuming responsibility on design of major industrial projects such as refineries, petrochemical plants, and steam or hydro power plants.

Relocation allowances cover moving costs plus transportation reimbursement for you and members of your family. If you have an interest in a San Francisco assignment, please send a resume of experience to George I. Copeland, Manager of Personnel. Personal interviews will be arranged for qualified condidates.

Bechtel
Corporation
220 Montgomery Street
SAN FRANCISCO

In New York City, a personal interview can be arranged by phoning Paul Keating, MUrray Hill 7-7100.

SENIOR PROCESS ENGINEERS

Permanent employment with an expanding company. Excellent advancement opportunities for men with at least 10 years experience in process design of petroleum and petro-chemical plants.

Send detailed resume to:
G. VICTOR HOPKINS

ARTHUR G. McKEE & CO.
2300 Chester Ave., Cleveland 1, Ohio

ENGINEERING QUANTITY SURVEYOR

A long-established heavy contractor has an excellent opportunity for a qualified quantity surveyor or take-off man whose work would largely be centered in the pre-bid quantity analysis of major projects such as dams, structures, tunnels and roads. This is a permanent position with a nationally prominent organization. Salary plus many benefits. Location San Francisco Bay area. Please send your personal and experience record. Your reply will be kept confidential.

P-4046, Engineering News-Record
68 Post St., San Francisco 4, Calif.

$25,000.00

PER YEAR

Permanent position open with midwest construction company for man with at least five years experience as

Bridge and Structure Superintendent

capable of taking complete charge of $5,000,000.00 annual volume of work.

Give full particulars in initial response. All replies completely confidential.

P-4040, Eng. News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERING COST ESTIMATORS

The Chemstrand Corporation, manufacturers of Acrilan and Chemstrand Nylon® needs engineers, experienced in the following:

- Construction and Project Cost Estimating
- Construction Scheduling
- Cost Analysis and Control

Bachelor's Degree in Engineering (preferably Chemical or Mechanical Specialization) required with a minimum of 3 years' Engineering experience in the above activities related to the design and construction of major chemical and/or synthetic fiber facilities. Occasional travel and temporary duty assignment at project site involved.

Excellent benefit plan. Salary commensurate with training and experience.

Send resume of background including salary history and requirements in confidence to

Manager—Technical Employment & Recruitment
Box ENR1
The CHEMSTRAND CORPORATION
Decatur, Alabama

® Registered Trademark

PLANT SUPT. *WANTED*

Steel fabricating plant wants superintendent capable of complete charge of active 1,000-ton shop. Company has excellent reputation, AAA-1 rating, 50 years experience. Location: Southwest, in city of 100,000, good recreational facilities and schools. Prefer man 35-45 years of age. Include record of experience, educational training, salary expected.

P-4031, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SALES ENGINEERS

A major steel company has need for sales engineers to promote and sell fabricated products in Middle Atlantic States. Excellent opportunities for men 25 to 30 years old with engineering background and a desire for sales work. Attractive salary with company car, expenses and bonus plan.

SW—2763 ENGINEERING NEWS-RECORD
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

DISTRICT REPRESENTATIVE

For well established light construction equipment company to cover New England south including Virginia, calling on established construction equipment dealers. Engineering background or strong mechanical aptitude and sales experience preferably this field. Age 25 to 40. State in detail education, experience, personal history, salary requirement. Salary and expenses plus bonus.

RW-4053, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

JAPAN

Young Civil Engineer, experienced in highway and airfield construction, seeks top-level position with American or foreign firm engaged in construction projects.
Specialist in soils . . . capable organizer . . . dependable. Top references.

PW-4051, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

• *POSITIONS WANTED*

Construction executive C.E. age 37. 12 years experience as civil engineer superintendent, assistant division manager on marine and heavy construction—dredging, pile driving bridge substructures, docks and lock construction including estimating purchasing and cost analysis. PW-3932, Engineering News-Record.

Available Hydraulic Dredge Civil Engineer. Many years experience in field investigation, estimates, consultant. Full time or Project Basis. PW-4024, Eng. News-Record.

Construction Administrator—25 yrs. one large N. Y. Contractor—Registered P.E.-Desire association established engineer consultant or contractor—Northern Jersey preferred but not mandatory—Will invest. PW-3974, Engineering News-Record.

Project Manager, B.S.C.E., 16 yrs. exp. hvy. const., hwys., flood control, earthwork. bldgs., Govt. contracts, field & office, employed. PW-3965, Engineering News-Record.

B.S.C.E. 30, Construction Superintendent de-sires management potential position with medium Western heavy and highway contractor. Minimum $12,000. PW-4084, Engineering News-Record.

European architect and structural engineer (40) at present college professor, looking for association or partnership with architect or engineer who needs help. Broad experience in most phases of general practice including commercial, public, military, industrial, schools, hospitals, dwelling houses and many structures. West coast preferred. PW-4133, Engineering News-Record.

Blaster—experienced sewers, water, founda-tions. J. G. Mason, 1446 Elm, Utica, N. Y. RE 5-7128.

Construction Engr.—College grad., married, age 37, 11 years exp. All phases industrial & commercial construction. Prefer Southeast. PW-4135, Engineering News-Record.

Project Management, contract administration, 22 yrs. exp. hvy. constr. major projects U. S. & O. S. PW-4119, Engineering News-Record.

Mgr. or Trouble-shooter, Cons't or allied fields. Headaches welcome. $13,000 min. Married, 35, P.E. New York. Syracuse-Ithaca area preferred. PW-4120, Engineering News-Record.

Construction Manager, Age 48, with 25 years experience, Desires connection with firm specializing in chemical and industrial type construction, Domestic or foreign. PW-4122, Engineering News-Record.

Construction Mgr.—Gen. Supt. B.S.C.E. Age 43, 20 yrs extensive experience foreign & US all phases construction major Petrochemical, Refinery & Indus. plants. Management responsibility incl. estimating, budgeting, cost control, contract negotiations, labor relations, engineering & purchasing, customer relations & negotiations, financial, office & construction organization & administration. Will consider partnership or part interest. Available relocation immediately. PW-4097, Engineering News-Record.

Architectural Engineer, 38, German license, U. S. citizen, 8 years U. S. Experience in industrial and commercial planning and construction, seeks position overseas, Europe preferred. PW-4112, Engineering News-Record.

Asst. Estimator. 2 years experience as As-sistant Estimator. 4 years, sales, concrete products, some design. Limited experience in air-conditioning and heating. PW-4114, Engineering News-Record.

Graduate Civil Engineer bored with his pres-ent sinecure desires a change to a working position. If its too rough for everyone else I'm your man. PW-4106, Engineering News-Record.

Excavating Supt. or General Supt. 15 year's Highway, Rock, Sanitary exp. Engineering background. Baltimore area. PW-4104, Engineering News-Record.

• *POSITIONS WANTED*

Construction Salesman. Contact man to look for new work, negotiate contracts coordinate work in progress. 12 years experience in heavy construction and engineering fields. PW-4107, Engineering News-Record.

Man with 15 years experience in all phases pile driving and water front construction seeks job with small firm where extensive travel is not required. PW-4108, Engineering News-Record.

Construction manager, age 48. Twenty years supervisory experience in the construction of buildings. Proven record as a producer with top grade contractors. $15,000.00 minimum. PW-4098, Engineering News-Record.

Registered Civil Engineer, 41, 15 yrs. varied office exp., highways, sewers, flood control, geology. Capable handling all phases of design. Resume available. Location Midwest. PW-4140, Engineering News-Record.

• *POSITIONS VACANT*

Civil Engineer Registered N. Y. 20 years ex-perience design and construction of industrial plants, roads and airfields. Desire permanent position upstate N. Y.; also consider investment in firm as associate. Details on request. PW-4124, Engineering News-Record.

B.C.E., M.S.C.E.,—35, 3 years consulting, 3 years hydraulic laboratory, hydrology, irrigation dams, model studies. Multi-lingual: German, French, Russian. Teaching or Consulting. PW-4147, Engineering News-Record.

• *SELLING OPPORTUNITY WANTED*

Connection with manufacturer of building ma-terials wanted. Will promote products in architects' engineers' offices. Thorough background detailing, specification writing. Henry Kent 120 NE 140 Street, Miami, Fla., Wilson 7-7912.

SEARCHLIGHT SECTION

CLASSIFIED ADVERTISING

BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

DISPLAYED RATES

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vest. on one col., 3 columns—30 in. to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

WANTED

Four Compartment
BIN and BATCHER
for ready-mix concrete plant.
WILLIAMS CONSTRUCTION CO.
Box 5045, Baltimore 20, Md.
Tel: MUrdock 6-1000

SEARCHLIGHT Equipment Locating Service

No Charge or Obligation

This service is aimed at helping you, the reader of "SEARCHLIGHT", to locate Surplus new and used Engineering and Construction equipment *not currently advertised.* (This service is for USER-BUYERS only).

How to use: Check the dealer ads to see if what you want is not *currently* advertised. If not, send us the specifications of the equipment wanted on the coupon below, or on your own company letterhead to:

Searchlight Equipment
Locating Service
c/o ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36, N. Y.

Your requirements will be brought promptly to the attention of the equipment dealers advertising in this section. You will receive replies directly from them.

- - - - - - - - - - - - - - - - -

Searchlight Equipment Locating Service
c/o ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36, N. Y.

Please help us locate the following equipment components.

....
....
....

NAME ....
TITLE ....
COMPANY ....
STREET ....
CITY 4/7/60

• *CONTRACT WORK WANTED*

Structural, Sanitary, Civil—Design and Draw-ing. Licensed Professional Engineers. CWW-4117, Engineering News-Record. Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year.
[illegible] without obligation
WILSON *Engineering Corp.*
College House Offices HARVARD SQ., CAMBRIDGE, MASS.

CONSTRUCTION SUPERVISION

Exclusive Training Course by mail for top positions. Publishers Manual of Advanced Construction Management. Send postcard for details.

National Schools of Construction
Est. 1952
Satsuma, Florida

ALLIS CHALMERS LOADERS

1—1955 Model HD 5-G, 1 yard loader, serial No. 25004. New undercarriage just installed.

1—1958 Model HD 6-G, 1½ yard loader, serial No. 4280 with Rock Bucket, Esco bucket teeth.

MICHAEL F. BREEN, INC.
1165 Longwood Ave. Bronx 59, N. Y.
LU 9-6017

FOR SALE

D-8

Late Model 15A Excellent operating condition 1245 working hours

SPERANZA & BARILE, INC.
212 Monore Ave. Rochester 7, N. Y.

EUCLID SCRAPERS

4—Model S-12's in excellent condition. G. M. 6-71 Engines, 5 speed Transmissions and 26.50 x 25 Tires. 12 yard struck capacity.

Includes Dry Air Cleaners, Hydraulic Filters, etc.
Priced for quick sale and ready for work.

FS-4144, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

PILE DRIVING EQUIPMENT

VULCAN AND McKIERNAN-TERRY
Steam Pile Hammers and Extractors

- DROP HAMMERS
- STEEL LEADS
- DRIVING CAPS
- PILE DRIVER HOSE
- HOISTS AND BOILERS
- STEEL SHEET PILING

CONMACO, INC.

DRexel 1-3930
820A KANSAS AVE.,
KANSAS CITY, KANS.

FOR SALE

ASPHALT PLANT

Complete 2000# Batch Type all electric asphalt plant with 35 c.y. material bin and 4 compartment hot aggregate bins—Apron feeder—2 dryers (21' x 50" and 24' x 60")—Hot elevator 3 x 6 Heavy Duty Vibrating Screen totally enclosed—Toledo Dial Type aggregate scale—Dust elevator and screw conveyor—2000# steam jacketed pugmill—75 H.P. Steam Boiler with Hopkins Low Pressure Oil Burners—Viking Asphalt Pump—10,000 gal. Asphalt and 10,000 gal. Fuel Oil Tanks

Plant is powered by electric motors and completely wired.

For Information Contact

Mr. Carl Petersen

925 Florida Avenue — Off: BEverley 5-0242
Oshkosh, Wisconsin — Res: BEverley 1-9068

USED BARGES

FOR SALE

Open Hopper Type
10 Barges—300'x48'x11'
3 Barges—280'x48'x11'

House Type—Steel Rolling Covers
8 Barges—230'x45'x11'

Address Inquiries to Marine Dept.

FEDERAL BARGE LINES
611 E. Marcean St. — St. Louis 11, Mo.

FOR SALE

PRICED TO SELL—REAL BARGAIN

1—3000B Manitowoc. Used 1300 Hrs. Torque Convertor 18-4" cats—100 Ft. Boom—30 Ft. Jib
1—51B E Shovel, 2½ yd. bucket. Used 10 Months
1—80D Northwest Shovel, Condition Excellent

D. C. SMITH
605 Fifth Ave., Pelham, New York, Pe. 8-2336

---

12 INCH HEAVY DUTY DIESEL-ELECTRIC DREDGE

500 HP GMC 8-268A main engine rebuilt within the past three months; Approx. 800 feet of pontoon line and 1,000 feet of shore line; Diesel powered work boat and all other accessories for immediate operation included. Priced at $150,000 with excellent terms.

COVE DEVELOPMENT CORP.
3900 N. Federal Hwy. — *WH 1-1216* — Pompano Beach, Florida

PILING

SURPLUS NEW and USED — **For Sale, Wanted or Rent**

We do a Nation-wide business in

STEEL SHEET PILING

IMMEDIATE SHIPMENT

815 pcs. 75 to 30 ft. Beth. SP-6a—New York
100 pcs. 62 ft. Beth. ZP-32—Connecticut
103 pcs. 60 ft. MZ-27—Tennessee
150 pcs. 60 ft. SP-4—W. Virginia
290 pcs. 60 to 30 ft. M-16 & M-115—Tennessee
370 pcs. 60 to 30 ft. M-115 & M-116—Indiana
150 pcs. 34-30 ft. M-116—Michigan
81 pcs. 25 ft. M-115—Mississippi
220 pcs. 15 ft. M-115—Missouri

Other lengths and sections at various locations. Storage yards at CHICAGO, BUFFALO & MEMPHIS.
Also 10" x 42# and 12" x 53# BP 60' in stock.

PILE DRIVING EQUIPMENT

VULCAN AND McKIERNAN-TERRY
PILE HAMMERS & EXTRACTORS
All Sizes—For Rent & Sale—Immediate Shipment

MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo. — CHestnut 1-4474

H & SHEET STEEL PILING

3700 PCS. BETH. SP6A, 50' 56' & 48' & 40' & 35'
1900 PCS. MP112—12', 25', 35', 40', & 60'
850 PCS. BETH.—AP3 20', 25', 30', 35', & 60'
790 PCS. BETH.—DP2—31', 35', 40', 50', 60'
1200 PCS. ZP38-ZP32—25', 36', 50', 60' & 65'
1400 PCS. BP8, BP10, BP12—BP 14—55' to 60'
600 PCS. BETH. ZP27—25', 30', 50' & 60'

PILING BOUGHT—SOLD—RENTED
STOCKS: N. Y.—BOSTON—BUFFALO
TORONTO—BALTIMORE—JACKSONVILLE
MIAMI—RICHMOND—NEW ORLEANS

DIESEL LOCOMOTIVES & CRANES
12—Gen. Elec. 100, 80, 65, 45, 25 & 23 ton
25 Ton New Whitcomb Diesel Elec.
25 Ton Industrial Loco Crane, 60' Boom

20 TON STIFF LEG DERRICK
1—AH&D, 40' Mast, 96' Boom, 16' BW

R. C. STANHOPE, INC.
60 E. 42nd St. — N. Y. 17, N. Y.
Telephones MU 2-3075 or MU 2-1898

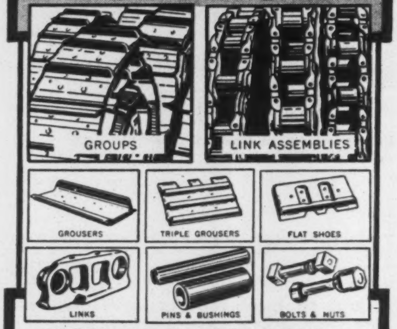
When you need PILING . . . fast

use this section, as many contractors do, as a piling buying directory. It can save you time when you want to know, quickly, where to buy good new or used piling.

IMMEDIATE DELIVERY FROM STOCK

EVDEL *quality*

TRACK



PRECISION MADE BY MASTER CRAFTSMEN for

- "ALLIS-CHALMERS"
  HD 5/6 • HD 9/11 • HD 15/16 • HD 20/21
- "CATERPILLAR"
  D 2 • D 4 • D 6 • D 7 • D 8 • D 9
- "INTERNATIONAL"
  TD 6 • TD 9 • TD 14 • TD 18 • TD 24

... CRAWLER TRACTORS!

EVDEL INDUSTRIES, INC.
1430 BROADWAY • NEW YORK 18, N. Y. • LA 4-0900
CABLES: "EVDELINDUS"

JOHNSON AUTOMATIC CONCRETE PLANT

New 1958—Batched 97,000 CY—Meets C of Eng specs. Fully automatic—fully recording—time and date stamp, etc. W/6 Bin—170 CY Aggr & 200 Bbl Cement Storage; 2—1032 Bbl Bulk Cement Silos w/high pressure aeration system, high & low pressure switches, signal lights & 275 Bbl/hr bucket elevator w/spout to either silos or bins: 2—2 CY Koehring tilting mixers push button for any of 12 pre-set mix selections.

M. K. Eby Const. Box 1679 Wichita, Kansas

For Rent

1—Bucyrus-Erie Dragline-Shovel, Model 54B
4—Euclid Bottom Dumps
2—Euclid End Dumps, 15 Ton
1—Euclid End Dump, 18 Ton

For Sale

1—P&H Shovel, 2½ Yd., Model 955A
1—Koehring Dragline-Clam, 1½ Yd., Model 605
1—Caterpillar Dozer, D.D.P.C.U., Model D8-13A
3—Concrete Buckets 1½ Yd.

All very good condition—Available immediately

DENVER CONSTRUCTION CO., INC.
5905 N. Ewing St. — Indianapolis 20, Ind.
Phone Fleetwood 6-2421

FOR SALE

112 Timber Trusses in sets of eight (8). Lengths vary from 87 Ft. to 12 Ft. Curved and Straight Top Chords. Sixteen (16) 12" x 12" Timber Towers, 26 Ft. High and Eight (8) 12" x 12" Timber Towers, 56 Ft. High.

ONE HUNDRED THOUSAND (100,000) f.b.m. 2" x 10" S4S used once. FORTY THOUSAND (40,000) sq. ft. of ⅝" Plyform used 3 times on one side. Miscellaneous accessories for Span Form Work all excellent condition.

Plans and material for inspection at jobsite.
Write or phone R. Martin or T. Walsh,
GILBANE BUILDING COMPANY
90 Calverley St., Providence, Rhode Island
Telephone: JAckson 1-5400

RAILS-TIES

TRACK ACCESSORIES

RAILS

MIDWEST STEEL CORP.
502 DRYDEN STREET
CHARLESTON, W. VA.

PIPE

Surplus New & Used
FOR SALE, WANTED OR RENT

For Sale or Trade

80,000'-30" O. D. NEW STEEL PIPE

.312", .344", .375", .406" walls
Double Random Lengths

UNTESTED
$94.00 ton, loaded

TESTED
$118.00 ton, loaded

Use for lines, casings, pilings, irrigation

Will sell all or part or will trade for surplus pipe or for interest in your project.

Large stock other sizes, also, 2" to 36" O. D.

Call us for prices, terms, delivery

VALLEY STEEL PRODUCTS CO.
PRospect 3-3020
124 Sidney St. St. Louis 4, Mo.

Call: HYACINTH 7-4900

PIPE, VALVES & FITTINGS
PILING • CULVERTS
ASBESTOS-CEMENT PIPE • ALUMINUM PIPE

ALBERT PIPE SUPPLY CO., Inc.
103 VARICK AVE., BROOKLYN 37, N.Y.

STEEL PIPE up to 48" O.D.

WELDING FITTINGS
FLANGES • VALVES

The IDEAL SUPPLY CO.
445 Communipaw Ave.
Jersey City, N. J., DElaware 3-2600
New York Phone: DIgby 9-2454

ASSOCIATED PIPE & FITTING CO., INC.

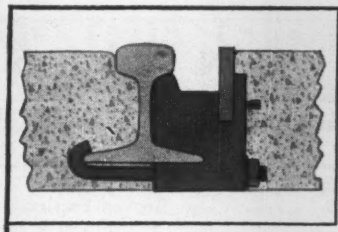
PILING PIPE SHELLS MANDREL FITTINGS
"H" BEARING PILE SLEEVES AND SHOES
K & M ASBESTOS CEMENT PIPE
CULVERTS CIRCLE ARCH SECTIONAL

262 RUTHERFORD BLVD., CLIFTON, N.J. • PR 3-8400

PIPE **PIPE**

2,000,000 ft. 2"............3,50# to the foot
1,000,000 ft. 3"............7,70#
1,000,000 ft. 4"............10,98#
500,000 ft. 6"............19,80#
200,000 ft. 8⅝"............28#
400,000 ft. 10¾"............35#
75,000 ft. 12¾"............40#
10,000 ft. 16"............42#

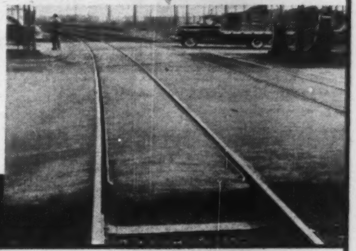
All No. 1 Grade Plain End and Cleaned
INDIANA-OHIO PIPE CO.
P. O. Box 5412 Shepard Station, Tel: CL-3-5527
COLUMBUS 19, OHIO



You SAVE ALL WAYS with "Guardmaster"

RAILWAY FLANGEWAY CROSSING GUARD

- Costs less to install
- Reduces Maintenance Costs
- Makes a smooth paved area over railroad tracks.
- Lasts longer.
- Designed for all Rail Sections New or Used.
- Use with concrete, asphalt or planking.
- *For literature and new developments write to*



KASLE STEEL & ALUMINUM CO.
P. O. Box 536, Detroit 32, Mich. TIffany 6-4200

NEW & USED RAIL—STANDARD & SPECIAL TRACKWORK—MINING & TUNNEL TRACKWORK—TUNNEL BOXES

CLYDE ELECTRIC STIFFLEG DERRICK

This Clyde Special Model H-27103, Serial No. X-2072, Steel Stiffleg Derrick was purchased new and *only* used at the Queens Anchorage Throgs Neck Bridge project in Whitestone, N. Y.

EQUIPPED WITH

- 150 ft. Boom
- 47½ ft. Mast, Mast Ladder
- 40 ft. Sills
- 30 ft. Bullwheel

CLYDE MODEL 8-A
SINGLE FIXED DRUM
REVERSING SWINGER

- 20,000 lbs. single linepull at 75 f.p.m.
- Powered with 50 H.P., 720 r.p.m.

Approx. Shipping Weight 10,000 lbs.

CAPACITIES

- 20 ft. to 100 ft. 20 tons
- 150 ft. 12 tons

Approx. Shipping Weight 73,000 lbs.

CLYDE FRAME-8
THREE DRUM BAND
FRICTION ELECTRIC HOISTS
with 200 H.P., 900 R.P.M. MOTOR

- Hoist capacity 18,000 lbs. single linepull at 230 f.p.m. Simultaneous booming & hoisting.
- 20" dia x 22" lg. drums, 45" flange.
- Friction clutches, brakes and boom drum pawl to be air operated.

Approx. Shipping Weight 31,650 lbs.

Components all electrically powered, 3 ph, 60 cy, 440 V.

This equipment can be inspected at the J. Rich Steers, Inc. yard—foot of Linden Avenue—Jersey City, N. J.

STEERS-SNARE
WHitehall 3-3500

A JOINT VENTURE
17 Battery Place
New York 4, N.Y.

SURVEYING INSTRUMENTS

USED • REBUILT • SALE
RENT • REPAIRING

BAILEY BRIDGES

FOR SALE FOR RENT

BAILEY BRIDGE RENTALS & EQUIPMENT
1325 Archer St. P. O. Box 753
San Luis Obispo, Calif.

INSTRUMENT REPAIR AND SALES

Midwest distributors for:

- Buff & Buff Mfg. Co.
- C. L. Berger & Sons
- David White Instr. Co.
- Eagle Instrument Co.
- Rolatape, Inc.

PROMPT REPAIR SERVICE
FIFTY YEARS EXPERIENCE
All types Transits and Levels

INSTRUMENT SALES CO.
ILLINOIS
CHICAGO RICHMOND
3947 W. Lawrence Ave. TECHNICAL DIVISION
PHONE: COrnelia 7-4646 PHONE: 2153

FOR SALE

1—Used Lima Model 1201, New Cummins Engine and Undercarriage Rebuilt in 1958
1—Used Garwood Buckeye Trencher Model 407. New in 1958
1—Used Manitowoc 3900
1—Used Manitowoc 3500

MANITOWOC-FORSYTHE CORPORATION
37-11 Vernon Blvd.—EXeter 2-6125
Long Island City 1, New York

P R O F E S S I O N A L   S E R V I C E S

MIDDLE ATLANTIC

J. E. Greiner Company

Consulting Engineers

Airports - Bridges -
Buildings
Highways & Expressways -
Port Facilities

1106 N. Charles St., Baltimore 1, Md.

Layne-New York Co., Inc.

Test Borings • Core Drilling
Grouting • Drilled Shafts
Water Wells • Water Treatment
150 Denton Ave., New Hyde Park, N.Y.
431 Market St., Camden, N. J.
1250 W. Elizabeth Ave., Linden, N. J.
15 Ryder St., Arlington, Mass.
5655 Bryant St., Pittsburgh 6, Pa.

Howard, Needles, Tammen & Bergendoff

Consulting Engineers
Bridges, Structures, Foundations,
Express Highways
Administrative Services
Kansas City - Cleveland - New York

E. Lionel Pavlo

Consulting Engineer

Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports
642 Fifth Ave. New York 19, N. Y.

Lawrence S. Waterbury

Consulting Engineer

Bowling Green 9-9298
26 Broadway New York 4

Steinman, Boynton, Gronquist & London

Consulting Engineers

HIGHWAYS - BRIDGES -
STRUCTURES

117 Liberty St., New York 6, N. Y.

Severud-Elstad-Krueger-Associates

Consulting Engineers
Structural Design - Supervision
Reports - Buildings - Airports
Special Structures
415 Lexington Ave., New York 17, N.Y.

Lockwood, Kessler & Bartlett, Inc.

Engineers *Surveyors*

Civil Engineering Investigations, Reports and Designs, Supervision of Construction, Cadastral, Geodetic, Topographic & Engineering Surveys, Photogrammetric Engineering and Mapping.
One Aerial Way Syosset, N. Y.

Modjeski and Masters

Consulting Engineers

Bridges and other Structures
Foundations
Highway and Expressways
900 North Sixth St. Harrisburg, Pa.
Philadelphia - Miami - New Orleans

Robert W. Lowry, Inc.

Consulting Engineers

Investigations, Reports, Supervision,
Airports, Highways, Expressways,
Bridges, Structures, Prestressed Design
Strengthening, Soil Engineering
Sewerage & Water Systems,
Principal Offices
227 Pine Street, Harrisburg, Penna.

The Kuljian Corporation

Engineers • Constructors

WE DESIGN AND CONSTRUCT

Power Plants • Public Works • Processing Plants • Oil Refineries • Chemical Plants • Textile Plants • Airport Facilities • Military Installation

1200 N. Broad St., Philadelphia 21, Pa.

Michael Baker, Jr., Inc.

Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation. Home Off.—Rochester, Pa. Br. Off.; Jackson, Miss.; Harrisburg, Pa.; College Park, Md.

Buchart Engineering Corp.

Consulting Engineers

Highways - Bridges - Sewer Systems
Surveys - Water Works - Dams - Reports
Supervision - Industrial - Municipal
Structures
55 S. Richland Ave., York, Pa.
Lancaster, Pa Washington, D. C.

SOUTH

Brown Engineering Company, Inc.

Architects—Engineers

Civil—Mechanical—Electrical—Industrial

Highway Design, Structural Design
Water Supply, Airports
Sewage Disposal, Industrial Plants
Land Development, Bridges
Railroads, Reports
Commercial & Industrial Buildings
P.O. Drawer 917, Huntsville, Alabama

Rader and Associates

Engineers - Architects

Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings, Industrial Plants, Reports, Investigations, Consultations, Aerial Photography, Photogrammetry.
First Nat'l Bank Bldg., Miami 32, Fla.

MIDDLE WEST

Consoer, Townsend & Associates

Consulting Engineers

Sewage treatment, sewers, storm drainage, flood control—Water supply and treatment—Highway and bridges—Airports—Urban renewal—Electric and gas transmission lines—Rate studies, surveys and valuations—Industrial and institutional buildings.

360 East Grand Ave. Chicago 11, Ill.

Roy B. Everson

S.E. Consultant Since 1906

For Purification Systems as applied to Sewage Treatment, Water Works and Swimming Pool Circulating Systems.
A New System for Automatic Control
211 W. Huron St. Chicago 10, Ill.
Phone SUperior 7-3339

Sargent & Lundy

ENGINEERS
Consultants to the Power Industry
Studies • Design • Supervision
140 South Dearborn Street,
Chicago 3, Ill.

Toledo Testing Laboratory

Engineers—Chemists

Concrete — Soils — Asphalt
Inspection Research
Tests Development
Foundation Investigation
Borings — Diamond Drilling —
Load Tests
Soils Mechanics Laboratory
1810 North 12th St. Toledo 2, Ohio

FOREIGN

underpinning and foundation co. of puerto rico

Pile driving, caissons,
underpinning, all types of foundations,
industrial and commercial construction,
sewers and sewage disposal.
800 Labra Ave. Santurce, P.R.
Phone: 3-1040

AERIAL SURVEYS

Aerial Map Service Co.

Topographic, Planimetric, Photo Maps for Highways, Mining, Resources, Construction. City Maps, Tax Maps, Photo Geology, Tellurometer Radio Distance Measurements. Triangulation, Electronic Computation.
1016 Madison Ave., Pittsburgh 12, Pa.

American Air Surveys, Inc.

AERIAL TOPOGRAPHIC MAPS &
AERIAL PHOTOS FOR
• Highways • Airports • Power & Pipe Lines • Railroads • Mining • All types construction • Stockpile Inventories
907 Penn Ave. Pittsburgh 22, Pa.
A NATIONWIDE SERVICE

Clyde E. Williams & Assoc., Inc.

Aerial Photos - Enlargements
Topographic Maps

At large and particular scales to suit various engineering needs, e. g. Airports, City Sewer & Water, Power & Pipe lines, Reservoirs, Subdivisions, Highways, Bridges & Inventories.
312 W. Colfax Ave. South Bend, Ind.

CONSULTANTS!

This section provides you with a dignified, ethical means of presenting your specialized services to key men in engineering.

THIS SECTION
is available to consulting engineers to contact prospective clients every week or every other week.

CLASSIFIED ADVERTISING INDEX

Albert Pipe Supply Company........ 113
Associated Pipe & Fitting Co....... 113

Bailey Bridge Rentals & Equipment. 113
Bechtel Corporation 110
Blount Brothers Construction Co..... 109
Breen Inc. Michael.................. 111

Chemstrand Corporation 110
Conmaco, Incorporated 112
Cove Development Corporation...... 112

Denver Construction Co. Inc......... 112

Eby Construction Co. Inc. Martin K.. 112
Engineering Consultants Ltd......... 110
Evdel Industries 112

Federal Barge Lines, Inc............ 112
Fulmer and Bowers Architects....... 109

Gilban Building Co.................. 112

Ideal Supply Company............... 113

Indiana-Ohio Pipe Company.......... 113
Instrument Sales Company.......... 113

Kasle Steel & Aluminum............ 113

Manitowoc-Forsythe Corporation..... 110
McKee & Company, Arthur G....... 113
Midwest Steel Corporation.......... 112
Mississippi Valley Equipment Co.... 112

National Schools of Construction..... 111

Peterson, Carl 112

Smith, D. C. 112
Speranza & Barile Inc............... 111
Southern New England Contracting Co. 109
Stanhope Inc. R. C.................. 112
Steers-Snare 113

Valley Steel Products Company...... 113

Williams Construction Company...... 111
Wilson Engineering Company........ 111

At Your Service...

The Searchlight Section is at your service for bringing business needs or "opportunities" to the attention of men associated in executive, management, sales and responsible technical, engineering and operating capacities with the industry served by McGraw-Hill publications.

ADVERTISERS IN THIS ISSUE

Acker Drill Co., Inc. 78
Allis-Chalmers 1
American Foreign Insurance Association .. 38
American Steel & Wire Div., United States Steel Corp. 94-95
Armco Drainage & Metal Products, Inc. .... 2nd Cover

Barber-Greene Co. 10-11
Bemis Bro. Bag Company 51
Bethlehem Steel Co. 67
Borden Metal Products Co. 20
Broderick & Bascom Rope Co. .... 4th Cover

Caterpillar Tractor Co. 88-89
Cleveland Trencher Co. 68
James B. Clow & Sons, Inc. 12-13
Columbia-Southern Chemical Corp. 70
Committee on Steel Pipe Research 63
Concrete Plant Mfgrs. Bureau 43
Concrete Reinforcing Steel Institute 73

John Deere Industrial Div. 29
Dodge Division, Chrysler Corp. 57
Dorr-Oliver, Inc. 66

The Eimco Corporation .... 3rd Cover
Elgood Equipment Corp. 80
Esso Standard Oil 85
Euclid Div., General Motors Corp. 74-75

L. B. Foster Co. 18

Goodall Rubber Company 9
Granco Steel Products Co. 39

Homelite Div., Textron Inc. 69
A. C. Horn Div., Sun Chemical Corp. 56
Hose-McCann Telephone Co., Inc. 51

Inland Steel Products Company 65
International Harvester Co., Construction Equipment Div. 4-5; 96

The Jaeger Machine Co. 78
Johns-Manville Corp. 52

The Kinnear Mfg. Co. 62
Kiplinger Washington Letter 32

Laclede Steel Company 77
LeRoi Div., Westinghouse Air Brake Co. 54
Link-Belt Speeder Corp. 6-7
Lock Joint Pipe Co. 16

Marlow Pumps 60
Maxon Construction Company, Inc. 49
Moretrench Corporation 87

National Gypsum Company 90
National Lead Company 3

Pacific Crane & Rigging Co. 86
Phoenix Bridge Company 80
Precision Instruments Inc. 73
Presstite Division, American-Marietta Co. .. 101

Ramset Fastening System 14
Raymond International, Inc. 15
Rex-Spanall, Inc. 93
Richmond Screw Anchor Co., Inc. 2

Sealmaster Div., Stephens Adamson Mfg. Co. 8
A. O. Smith Corp., Permaglas Div. 32
Spencer, White & Prentis, Inc. 62
John W. Stang Corp. 72
Stanpat Co. 55
Steel Joist Institute 27
Stephens-Adamson Mfg. Co., Spherco Div. .. 76
Stran-Steel Corporation, National Steel Corp. 58-59
Swenson Spreader & Manufacturing Co. 35

Thew Shovel Co. 99
E. A. Thompson Co., Inc. 61
Tousey Varnish Company 30-31
Truck Mixer Mfgrs. Bureau 33

Underpinning & Foundation Co., Inc. 80
U. S. Steel Corp. 46-47
United Steel Fabricators, Inc. 79

David White Instrument Co. 87
The White Motor Co., Autocar Division 64
Wild Heerbrugg Instruments, Inc. 92

Yeomans Brothers Co 71
Yuba Consolidated Industries, Inc 102

Professional Services 114

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

Employment Opportunities 109-111
Notices
  Proposals 106-108
Equipment
  (Used or Surplus)
  (For Rent, Sales Wanted) 111-113
Advertisers' Index 114

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000

Member

Number of copies of this issue printed 85,592

D. S. ROBERTSON, Advertising Sales Manager
HUGH J. CARLSON, Assistant Business Manager

ADVERTISING REPRESENTATIVES
Atlanta, 3—Rhodes-Haverty Bldg.,
Robert H. Powell, Jr.
Chicago, 11—520 No. Michigan Ave.
L. H. Hunt, W. G. Payne, Earl S. Moore, Jr.
Cleveland, 13—1164 Illuminating Bldg.,
55 Public Square
H. A. Bergstrom, F. P. DiToro
Dallas, 1—Vaughn Bldg., 1712 Commerce St.,
Robert T. Wood
Denver, 2—Tower Building, 1700 Broadway
J. W. Patten
Detroit, 28—Penobscot Bldg.,
R. I. Mace
Los Angeles, 17—1125 W. Sixth St.,
Knox Bourne, S. S. Tiebout
New York, 36—500 5th Ave.
C. D. Neulen, H. T. Olsen
Robert L. Barker
Philadelphia, 3—Six Penn Center Plaza
D. G. Jensen
Patrick Keleher
Pittsburgh, 22—1111 Oliver Bldg.,
M. Russell
St. Louis, 8—Continental Bldg.,
E. B. Mingle, Jr.
San Francisco, 4—68 Post St.
John H. Hernan

OTHER SALES OFFICES:
Boston 16—350 Park Square Bldg.,
United Kingdom, Edward E. Schirmer, 95 Farringdon St., London E.C. 4.—Germany, Austria, Stan Kimes, 85 Westendstrasse, Frankfort/Main, Germany—Switzerland, Italy, France and Belgium, Michael R. Zeynel, 2 Place du Port, Geneva, Switzerland

Do YOU know HOW MUCH the

CONSTRUCTION DAILY

can help you . . .

- ***go after the most profitable jobs***
- ***stabilize your new business procurement***
- ***plan ahead***
- ***move with the market***
- ***keep ahead of competition***

For less than $1 a day you can get this 2-in-1 Service

1. CONSTRUCTION DAILY — ***NEWSLETTER***

—24-hour advance news on big bid dates, top jobs, planning ahead, trends, costs and prices, appropriations, new investment money trends, labor news, Washington events and news affecting construction

—also new PROPOSED projects just entering their planning stage—at the rate of $80 million a day

2. CONSTRUCTION DAILY — ***REPORTS***

—Bids Asked dates, Low Bidders, Contracts Awarded averaging $75 million a day

You get names and addresses of Owners, Contractors, Engineers, Architects along with job descriptions, job locations, job follow up for new developments, in all 50 states, Canada and larger foreign projects.

See for yourself—Send for your sample copies of CONSTRUCTION DAILY, test it out, see how it is helping others and can help your business. **Write:**

Manager, CONSTRUCTION DAILY
P.O. Box 89, Times Square Station
New York 36, N. Y.

Editorials

Reshoring Vital to Safety

A RECENT FORMWORK COLLAPSE, costing thousands of dollars, though it miraculously took no lives, originated with careless reshoring practices, according to a building department official of the city concerned.

Construction of this building, like so many others, placed temporary loads on the reshored slabs far greater than their permanent design loads. If this is a practice that can't be avoided, then reshoring must be counted on to take the extra load.

To prevent overstressing when the concrete is least able to take it, reshoring must reduce spans and bending moments and distribute loads between two or more floors. Usual practice calls for reshoring two floors below the floor being cast.

The building official's inspection after the collapse disclosed careless reshoring in many areas of the building. Some of the pipe screw-jack reshores appeared to have been bent before installation. Some were not carefully plumbed. These two defects produce eccentric loading, which can lead to buckling failure at a fraction of the reshore's load capacity under concentric loading.

Plumbness of reshores should be carefully checked, perhaps with a carpenter's level or a plumb bob frame. Defective reshores should be removed and replaced. When timber reshores are used, tight wedging at the bottom and cap plates at the top are necessary to insure concentric bearing. Providing sufficient bearing area and rigidity in all timber mudsills is essential for all types of reshores.

Contractors, engineers, building inspectors and others concerned with construction safety must not let the fast pace of construction blind them to these important safety details. One or two defective reshores—slipping, settling or buckling under load—can trigger a serious failure.

Prosperity via Zoning

THE NECESSITY OF ZONING is widely recognized. There is abundant evidence that lack of zoning or underzoning permits overbuilding and the wrong type of occupancy, both of which can have a detrimental effect on the prosperity of a city. There is not nearly as much evidence of the equally bad effect of excessively restrictive zoning.

Because it purports to offer such evidence, a recently published book, "Offices in the Sky," a history of the skyscraper, by Earle Shultz and Walter Simmons (Bobbs-Merril Co.), is of interest. The authors contend that zoning has held back building construction in Chicago while it encouraged construction in New York City.

They point out that from 1914 to 1920, when business activity in the U.S. was increasing, building dropped off in Chicago. The city had placed a 200-ft limitation on building height in 1914. Equally significant, they say, was the seven-year building boom that started about a year after an increase in the height limit was permitted in 1920.

Again, in 1942, Chicago reduced the height limit, and again building declined during a period of sharply increasing business activity throughout the country.

Meanwhile, New York was busily augmenting its already famous skyline to house the great business expansion. Its passage of a zoning law in 1916, the first in the U. S., had created a highly favorable situation. The authors of "Offices in the Sky" believe that some of the business that went to New York wanted to go to Chicago and would have if it could have been accommodated there. But Chicago had not built enough office space; New York had.

This argument bolsters the theory that zoning can have a profound effect on the prosperity of a city. It can stimulate conditions that will attract business or repel it, that will create a healthy business climate or depress it, that will make the city a pleasant place in which to live and work or make it undesirable.

Therefore, it is important that a city regulate zoning. But it is equally important that its laws be not overly restrictive. A good zoning law must have just the right balance to permit orderly progress.

Nuclear Excavation

INSIGNIFICANT THOUGH IT BE compared with the main issue of avoiding nuclear warfare, construction, nevertheless, has its own special interest in the outcome of the nuclear test ban negotiations now so much in the news. This interest relates to the possibility of using underground explosions of small nuclear devices for cheap, large-scale excavation. Some experimental programs had actually been planned—excavation of a harbor in Alaska was one—but progress has been stymied by the moratorium on underground testing, which has now dragged on for 18 months.

Simply stated, the present situation is that the U.S. (at least the military and the AEC) wants to resume underground testing, while the Russians want to extend the moratorium for as much as five years while methods for detecting such tests are being sought. Because complete rejection of this proposal would give the Russians a propaganda advantage, the U.S. and Great Britain have agreed to a further extension of the underground test moratorium, but for a much shorter period. President Eisenhower is reported to favor a year's extension.

One can only hope that the wisdom of such a decision would prove to be justified by clear and safe steps toward world peace. In the meantime, however, progress toward developing the kind of small, reasonably non-radioactive explosion needed for excavation purposes will continue to be blocked. It is a sad commentary on the times.

You're years ahead
with an EIMCO!

A Tractor with Guts and Integrity!

In any piece of equipment there are vitally important components and engineering developments not apparent to the eye. Only after years of hard and strenuous use, does their strength or weakness become apparent . . . and inscribe itself on your profit and loss statement!

One of the important features of the modern Eimco line of crawler-tractors is the broad use of heat treated alloy steels, for greater strength and resistance to metal fatigue. Instead of using cheaper iron castings, Eimco produces highest quality, carefully controlled steel in its own electric furnaces, under highly skilled metallurgists.

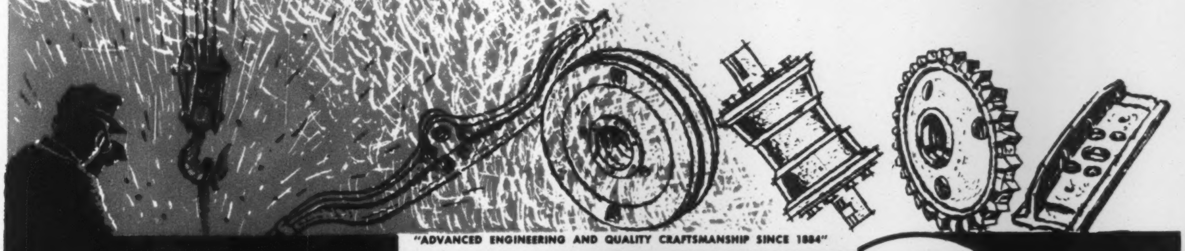
In an Eimco, the track shoes, sprockets, idlers, track rollers and equalizer bars are all produced in Eimco's vast and modern plants from heat-treated cast alloy steels, and other components from special steels, tailor-made by Eimco for their particular end-uses. One of the results has been a record of over seventy per cent savings on maintenance and parts costs by Eimco operators, as against the average for any other leading make of crawler-tractors!

You can easily see many of the Eimco exclusives, such as Up-front Operator Position; "Unidrive" transmission at work, for flip-of-the-lever shifting, forward or reverse; Dual Final Drives for maximum maneuverability and true spin turns and others.

But remember, under these unique and important features, is the heart . . . the guts . . . of any tractor. The integrity, quality and craftsmanship of the manufacturer. Eimco's are built to a standard that permits a full year guarantee on the entire tractor and transmission.

So step up your work output . . . and profit . . . with the modern and efficient line of crawler-tractors.

Eimco 103	**Eimco 105**	**Eimco 106**
100 HP	143 HP	205 HP



"ADVANCED ENGINEERING AND QUALITY CRAFTSMANSHIP SINCE 1884"

Get all the facts!
Write today . . .

THE EIMCO CORPORATION

EXPORT OFFICE: 51 - 52 SOUTH STREET, NEW YORK, N. Y. B - 510
BRANCHES AND DEALERS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

EIMCO

TRACTOR LOADER
DIVISION
634 SOUTH 4TH WEST
SALT LAKE CITY, UTAH — U.S.A.

Foss Launch & Tug Co.'s crane lifts the 125-ton diesel locomotive and places it on the big barge while, in the foreground, Morrison-Knudsen's bulldozer gets set to apply the power.

"Operation Rescue" puts men and machines to test.

A mud slide swept 4 locomotive sections and a coach of the Great Northern's crack "Empire Builder" into Puget Sound. Seven other cars were derailed. Double track lost totaled 2,063 feet. More than 1,000 feet of roadbed was buried under 12,400 cu. yds. of mud and debris.

Yet, 26 hours later, it was "business as usual" on the Great Northern. Foss Launch & Tug Co. rushed their 100-ton barge crane, equipped with Yellow Strand, to the job. Great Northern's locomotive cranes—also equipped with Yellow Strand—were rolling minutes after the disaster. And Morrison-Knudsen Co.'s bulldozers clambered down to the site ready for work. The B & B Wire Rope salesman was called out at midnight to furnish a winch line for one of the bulldozers.

Each team had a job to do—and Yellow Strand Wire Rope did its share. With Yellow Strand you have confidence that comes with knowing you have the best money can buy. See your Yellow Strand distributor today! Broderick & Bascom Rope Co., 4203 Union Blvd., St. Louis 15, Mo.

Yellow Strand®

WIRE ROPE SLINGS CLIPS